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ABSTRACT

The central purpose of this study was to assess the level of mastery of Florida secondary students enrolled in applied principles of agribusiness and natural resources occupations programs during the 1982-83 school year. In addition, the study sought to determine which recommended competencies were in fact being taught by teachers. The data were collected from 1,039 students and 44 teachers of agriculture. Using the 60-item Applied Principles Achievement Test (APAT), the study found that the students' mean level of mastery was slightly more than 52 percent. Students performed best on APAT questions related to the core component (agricultural business management, agricultural mechanics, leadership, and citizenship), agricultural production, and agricultural resources sections. Performance was poorest in the areas of ornamental horticulture, agricultural mechanics, and forestry. Students who scored highest were usually members of Future Farmers of America (FFA), were involved in supervised occupational experiences, planned to continue with postsecondary education or enter the military, and planned to enter an agricultural occupation. In addition, the study found that 65 of the 140 recommended competencies were taught by 75 to 100 percent of the teachers, and 51 competencies were taught by 50 to 75 percent of the teachers. On the basis of the data collected and analyzed, the investigators recommended strengthening instruction in applied principles by improving teacher preparation, improving the curriculum, and creating instructional materials. They also recommended encouraging students to join FFA and participate in supervised occupational experiences. (The APAT and survey instruments listing competencies make up more than half the document.) (KC)

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ED249354

Assessment of Competencies Possessed by Students Enrolled in Applied Principles of Agribusiness and Natural Resources Occupations Program

A Report of Research

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TABLE OF CONTENTS

	PAGE
ACKNOWLEDGEMENTS	ii
LIST OF TABLES	iii
INTRODUCTION	1
PURPOSE	3
RESEARCH PROCEDURE	4
FINDINGS	8
CONCLUSIONS	26
RECOMMENDATIONS	29
REFERENCES	31
APPENDIX A	33
APPENDIX B	35
APPENDIX C	38
APPENDIX D	68
APPENDIX E	82
APPENDIX F	84
APPENDIX G	88
APPENDIX H	90
APPENDIX I	92

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LIST OF TABLES

		PAGE
1	Mean Item Discrimination and Item Difficulty for APAT According to Major Content Area	6
2	Achievement of Students on the APAT	9
3	Current Grade in School of Students Completing the APAT	10
4	Mean Score on APAT According to Grade in School	10
5	Analysis of Variance: Mean APAT Scores According to Current Grade in School	11
6	Mean Score on APAT According to Previous Enrollment in Agriculture	12
7	Mean Score on APAT According to FFA Membership	12
8	Mean Score on APAT According to Whether Student Has SOE Program	13
9	Career Plans After Graduation and Mean Score on APAT According to Career Plans	14
10	Analysis of Variance: Mean APAT Score According to Career Plans	15
11	Degree to Which the Competencies in the Various Components of Applied Principles are Being Taught by Teachers	17
12	Degree to Which Applied Principles Competencies Are Being Taught by Teachers	18
13	Competencies Identified by Over 75 Percent of Teachers As Being Actually Taught in Applied Principles of Agribusiness and Natural Resources Education	19
14	Percentage of Competencies by Content Area Identified By More than 75 Percent of Teachers as Being Included In The Applied Principles Program	26

INTRODUCTION

Vocational agriculture is a major educational program in Florida's public schools. In 1981, the total funds allocated for job preparatory programs in agriculture were $15,422,250.00 (Division of Vocational Education, 1982). Additional resources were also allocated for exploratory programs in grades 7 and 8. As a result of this public investment, the Florida agricultural industry has available a pool of employees with career skills related to agriculture and employees with leadership training and ability. In addition, community colleges and universities are provided with a pool of potential students having basic agricultural competencies.

According to Kirkland (1979), in the 1978-79 school year there were 373 vocational agriculture departments and 576 teachers. In the 1982-83 school year, there were 409 departments employing 573 vocational agriculture teachers (Department of Agricultural and Extension Education, 1982). These teachers instruct over 50,000 students annually.

In recent years, there has been an increased emphasis regarding the need to develop and improve approaches for evaluating educational programs. Currently, a great deal of attention is being given to the concept of accountability in education. Effective educational evaluation is vital for improving education programs since it makes it possible to determine the merits of existing programs, the need for new programs, or the need for revision of existing programs.

In this atmosphere of accountability, legislators, educators, and the general public are asking if expenditures for vocational education are producing desired results. Funding agencies, too, are asking for evaluative information upon which policy decisions are based. Moreover, a review of the Vocational Educational Amendments of 1976 (American Vocational Journal, 1976) makes it clear that the writers of that legislation expect evaluations of vocational education programs to yield data and information useful in formulating on-going and future policy and program decisions. However, based on a review of a report to the Governor of Florida, it is obvious that

sufficient data substantiating the effectiveness of vocational education is not available, thus lending support for the need to investigate this area (Governor's Commission on Secondary Schools for the State of Florida, 1983).

One commonly used measure of the effectiveness of a curriculum is the performance of students. The assessment of student mastery of skills and knowledge may also be a measure of teacher effectiveness. Three purposes have been identified for student evaluation by Calhoun and Finch (1976): 1) to determine readiness to advance to next learning level; 2) to diagnose student's level of achievement for purposes of proper placement at the onset of instruction and for determining deficiencies in learning; and 3) to provide individual guidance. Thus, tests provide a measure of how much is being learned in an instructional program and how well the objectives are being mastered. In order to properly use student tests as a measure of program effectiveness, a set of measurable objectives must be developed.

These objectives should be based upon competencies that industry recognizes as necessary for employment. Consequently, one measure of program effectiveness is the extent to which students completing or leaving an instructional program possess or fail to possess the competencies specified in the instructional objectives. Therefore, test information cannot only be used to evaluate program effectiveness, but can also be used to evaluate the students' mastery of instructional objectives as an aid to placing students in appropriate employment or in additional instructional situations (Glasser and Nitko, 1971). Instruments or tests composed of items keyed to a set of specific measurable objectives are termed criterion-referenced tests (Ivens, 1970).

In order to have valid criterion-referenced measures (tests) of the competencies possessed by students enrolled in Applied Principles of Agribusiness and Natural Resources Occupations in Florida, Cheek and McGhee (1983, a, b, c, d, e, f) conducted a series of projects to develop such instruments. As a result of their activities, test item banks were developed for the major content areas of the Applied Principles of Agribusiness and Natural Resources Occupations Program (hereafter referred to as "Applied Principles"). Selected items from the banks relative to the Applied Principles program were used in

the present study to assess student mastery of competencies in the Applied Principles program.

Applied Principles of Agribusiness and Natural Resources Occupation (3720) is primarily designed to be taught at the tenth grade level and students who enroll should have completed Fundamentals of Agribusiness and Natural Resources Occupations (3710) in the ninth grade. Applied Principles consists of three components with each component designed to utilize one-third of the school year (60 days). All students complete the common core component consisting of competencies common to all agricultural/agribusiness occupations. The common core competencies are divided into three instructional areas: 1) agricultural business management; 2) agricultural mechanics; and 3) leadership and citizenship development. Instructors then select two specialized components to complete the Applied Principles course from the following taxonomies: agricultural mechanics; agricultural production; agricultural products; agricultural resources; agricultural supplies and services; forestry; and ornamental horticulture. Each of the two components are taught for one-third of the school year (60 days) and should be selected so as to provide the basic competencies for specialized programs offered at the eleventh and twelfth grade.

PURPOSE

The central purpose of this study was to assess the level of mastery of Florida students enrolled in the Applied Principles program during the 1982-83 school year. In order to achieve this purpose, the following objectives were developed as guidelines for conducting the research:

1. Determine the level of mastery of currently enrolled vocational agriculture students on the Applied Principles Achievement Test (APAT).

2. Compare students' level of mastery on the Applied Principles Achievement Test (APAT) according to the following:

   A. Current grade in school.
   B. Previous enrollment in agricultural classes.
   C. FFA membership.
   D. Involvement in the supervised occupational experience program.
   E. Career plans.

3. Determine whether competencies identified in the state curriculum guide for Applied Principles (Panhandle Area Educational Cooperative and Florida Department of Education, 1980) are being taught by the teachers in the schools.

RESEARCH PROCEDURE

Reported herein are the research procedures employed to accomplish the major purpose and objectives of the study. This is divided into the following sections: (1) population; (2) instrumentation; (3) data collection procedures; and (4) statistical analysis.

Population

The population for the study were students enrolled in Florida schools where an Applied Principles of Agribusiness and Natural Resources Occupations program (DOE 3720) was taught during the 1982-83 school year.

In order to determine the schools teaching the Applied Principles program, the five Department of Education regional consultants for agribusiness and natural resources education were contacted and asked to identify the schools in which Applied Principles were being taught and the names of the teachers teaching the program. This resulted in a list of 127 teachers who were offering the Applied Principles program. A letter (Appendix A) was sent to each of the identified teachers requesting verification of whether they were offering the program. If a teacher was offering the program they were also asked if they would be willing to administer a test to their

students near the end of the school year. This letter and a follow-up letter (Appendix B) resulted in returns from 52 teachers who indicated that they would be willing to participate and could administer the tests to their students enrolled in the Applied Principles program. These teachers identified 1587 students to whom the test might be administered.

Instrumentation

Because of the nature of Applied Principles, 6 component tests of 20 questions each were constructed from test item banks for the Applied Principle program developed by Cheek and McGhee (1983, a,b,c,d,e,f). The six component tests were: 1) common core; 2) agricultural production; 3) ornamental horticulture; 4) agricultural mechanics; 5) forestry; and, 6) agricultural resources (Appendix C). Two other possible component tests, agricultural products and agricultural supplies and service, were not developed because of an insufficient number of students enrolled.

The questions comprising the test related to competencies identified in the document entitled A Suggested Curriculum Guide for Applied Principles of Agribusiness and Natural Resources Occupations (Panhandle Area Education Cooperative and Florida Department of Education, 1980). The number of questions in the test related to these content areas was proportional to the recommended percentage of time that should be allocated to instruction in each component. In each case, one third of the questions related to the common core area, one third to a taxonomy component program area, and one third to another taxonomy component program area.

Test questions were selected from those for each major content area in the item banks developed previously by Cheek and McGhee (1983 a, b, c, d, e, f). Based upon recommendations of the Office of Instructional Resources, University of Florida, items were selected using the following criteria:

1. Item discrimination index greater than 0.30 which indicates that the item can discriminate between students who in general do poorly on the test from those who obtain high scores.

2. Item difficulty, a measure of the proportion of students who correctly answer an item, should be between .50 and .80.

Table 1 reveals the mean item discrimination and item difficulties for test questions included on each of the component tests. It may be observed that the criteria used in item selection were met with one exception. The mean item difficulty for the agricultural mechanics component was lower than the recommended level.

TABLE 1

Mean Item Discrimination and Item Difficulty for APAT According to Major Content Area

Component Test	Mean Item Difficulty*	Mean Item Discrimination*
Common Core	.65	.61
Agricultural Production	.61	.56
Ornamental Horticulture	.56	.52
Agricultural Mechanics	.38	.30
Forestry	.61	.51
Agricultural Resources	.74	.49

* Based upon item analysis (Cheek and McGhee 1983, a,b,c,d,e,f).

An estimate of the reliability of each item bank of questions was determined by calculating a Kuder-Richardson 20 correlation coefficient. The Kuder-Richardson 20 correlation coefficients for each of the components were as follows: Core, .89; Agricultural Production, .89; Ornamental Horticulure, .89; Agricultural Mechanics, .77; Forestry, .88; and Agricultural Resources, .94.

In addition to the test items designed to assess performance in Applied Principles, five additional items sought information concerning the student's grade in school, FFA membership status, previous enrollment in agricultural classes, supervised occupational experience program, and career plans.

A teacher questionnaire (Appendix D) was developed to obtain data necessary to accomplish objectives two and three. The questionnaire was designed to

determine whether or not each of the competencies identified in the Curriculum Guide (Panhandle Area Educational Cooperative and Florida Department of Education, 1980) for the Applied Principles program were included by teachers in their Applied Principles program.

Data Collection

Data for this study were collected during the period April 12, 1983 through June 10, 1983. Fifty-two teachers who indicated a willingness to participate in this project were sent a letter (Appendix E) indicating that a packet was forthcoming. The packet contained a cover letter (Appendix F), a sufficient number of student tests and answer sheets, and a teacher questionnaire. The teachers were encouraged to return the completed answer sheets by May 15, 1983. Those doing so received a letter of appreciation (Appendix G) and a printout of their students' performance on the test. A follow-up letter (Appendix H) was mailed on May 16 to teachers who had not responded. By June 1, 1983, 44 teachers had returned the teacher questionnaires and 1039 student answer sheets. Those teachers who still had not responded were contacted by phone to encourage return of the completed materials. These activities did not result in additional materials being returned. A total return of 44 teacher questionnaires (84.6 percent) and 1039 student answer sheets were usable in the study.

Data Analysis

Data were transferred from scan sheets to tape by the University of Florida data processing center. To analyze data related to objectives one and two, total mean scores were computed for each component of the Applied Principles Achievement Test (APAT). Descriptive statistics were also utilized to summarize each of the five demographic variables in objective two. One way analysis of variance was used for students' mean scores on the APAT when considering grade in school and career plans. The t-test was used in objective two to determine whether or not differences existed in students' mean scores on each component of the APAT with respect to current grade in school, FFA membership, previous enrollment in agriculture classes, and involvement in

supervised occupational experience programs. Descriptive statistics were used to summarize and analyze the data in objective three.

FINDINGS

Objective One

Objective one was designed to determine the mastery level (achievement) of currently enrolled vocational agriculture students on the various components of the Applied Principles Achievement Test (APAT).

As shown by the data in Table 2, the percentage correct scores on the components of the APAT ranged from 61.75 percent correct to a low of 40.55 percent correct. The core component had the highest mean score 12.35 (61.75 percent) and the ornamental horticulture, agricultural mechanics, and forestry components had the lowest mean scores of 8.81 (44.05 percent), 8.25 (41.25 percent), and 8.11 (40.55 percent) respectively. The common core component was composed of three sub-components: 1) agricultural business management; 2) agricultural mechanics; and 3) citizenship and leadership. It was found that students performed best on the leadership and citizenship portion of the test and poorest on agricultural mechanics.

In order to determine how students performed on the APAT test regardless of component, a total test score was derived. The mean total raw score was 31.37 (52.28 percent) with a standard deviation of 10.81 which indicates that two-thirds of the students had a mean score somewhere between 20.56 (34.27 percent) and 42.18 (70.03 percent).

TABLE 2

Achievement of Students on The APAT
N = 1039

Component	Mean Raw Score	Number of Questions	S.D.	N	Percentage Score
Core	12.35	20	4.08	1038	61.75
Agricultural Business Management	4.27	7	1.61	1038	61.00
Agricultural Mechanics	3.92	7	1.83	1038	56.00
Leadership and Citizenship	4.17	6	1.71	1036	69.50
Agricultural Production	11.14	20	4.10	823	55.70
Ornamental Horticulture	8.81	20	4.43	633	44.05
Agricultural Mechanics	8.25	20	3.22	380	41.25
Forestry	8.11	20	3.21	190	40.55
Agricultural Resources	10.06	20	3.36	34	50.03
Total Test	31.37	60	10.81	1039	52.28

Objective Two

As a second objective the researchers sought to compare students' level of mastery on the APAT according to five variables: 1) current grade in school; 2) previous enrollment in agriculture classes; 3) FFA membership; 4) involvement in a supervised occupational experience program; and 5) career plans.

Current Grade in School

Students completing the APAT were asked to indicate their current grade in school. Data in Table 3 suggests that the vast majority (66.3 percent) of the students were in the tenth grade. Just 19.2 percent were in the eleventh grade, and less than 10 percent of the students were in either the ninth or twelth grade.

TABLE 3

Current Grade in School of Students
Completing the APAT

N = 911

Grade In School	Number	Percent
9th	41	4.50
10th	604	66.30
11th	175	19.20
12th	91	9.90

The total mean scores and standard deviations for the various grade in school categories, of students taking the APAT are presented in Table 4. The scores ranged from a high of 34.05 for students in the 11th grade to a low of 25.76 for the 9th grade students.

TABLE 4

Mean Score on APAT According to Grade in School
N = 911

Current Grade in School	Number	Mean Score*	Percentage Score	Standard Deviation
9th	41	25.76B	42.9	9.34
10th	604	32.08A	53.5	10.25
11th	175	34.05A	56.8	11.23
12th	91	33.14A	55.2	10.59

*Mean scores with the same letter are not significantly different at the .05 alpha level.

A one-way analysis of variance was computed to determine if there were significant differences in the mean scores of students on the APAT for the various grade levels. The analysis of variance resulted in an F value of 7.28,

which was significant at the .0001 level as indicated in Table 5. Duncan's multiple range test was used to determine where significant differences lay. Significant differences existed between mean score for ninth grade students and the mean scores of tenth, eleventh, and twelfth grade students. There were no significant differences between the mean scores of tenth, eleventh, and twelfth graders.

TABLE 5

Analysis of Variance: Mean APAT Scores
According to Current Grade in School
N = 911

Source	Sum of Squares	df	Mean Square	F	PROB>F
Between Groups	2388.03	3	796.34	7.28	.0001
Within Groups	99223.46	907	109.40		
Total	101612.49	910			

Previous Enrollment in Agriculture

In response to the question of whether they had ever been in an agricultural class before the current year, 77.5 percent of the students indicated that they had previously been in an agricultural class while 22.5 percent indicated that they had not been enrolled. The t-test was used to determine whether significant differences existed between the mean scores of these two groups on the APAT with the .05 level of significance as the critical standard. Data in Table 6 reveal that there was no significant difference between mean scores of students who had and students who had not previously been enrolled in an agricultural class. The mean score for previously enrolled students was 32.78 which was just slightly higher than the score of 31.55 for students who had not previously been in an agricultural class.

TABLE 6

Mean Score on APAT According to Previous Enrollment in Agriculture
N = 897

Enrollment	Number	Mean Score	SD	t	Probability
Previously Enrolled	695	32.78	9.90	1.47	0.14
Not Previously Enrolled	202	31.55	12.13		

Membership in FFA

Almost three-fourths (74.5 percent) of the students completing the APAT indicated that that they were currently members of their schools' FFA chapter, while 25.5 percent were not. To determine whether there were significant differences between mean scores on the APAT according to membership in FFA, the t-test with a .05 level of significance as the critical standard was used. As illustrated in Table 7, students who were FFA members scored significantly higher (33.42) than those who were not FFA members (30.32).

TABLE 7

Mean Score on APAT According to FFA Membership
N = 889

Membership Status	Number	Mean Score	SD	t	Probability
FFA Member	662	33.42	9.92	3.93	0.0001
Not FFA Member	227	30.32	11.16		

SOEP Involvement

Students were asked if they have a supervised occupational experience program (SOEP), such as raising a steer, growing a garden, or working at an agricultural job. Almost two-thirds (64.8 percent) of those responding indicated that they did have an SOEP while the other one-third (35.2 percent) did not. The t-test was used to determine if students with an SOE had significantly different mean scores on the APAT than students without an SOE. A .05 level of significance was used as the critical standard. Data in Table 8 indicate that students with an SOEP had significantly higher mean score (33.48) than students who indicated that they did not have an SOEP (30.92).

TABLE 8

Mean Score on APAT According to Whether Student Have an SOE Program

N = 883

SOE Status	Number	Mean Score	SD	t	Probability
Have SOE	572	33.48	10.27	3.50	0.0005
Do not have SOE	311	30.92	10.47		

Career Plans

Students were asked to indicate their post high school career plans. Data in Table 9 reveal that the students who planned to attend college or pursue other post-secondary education and students who were unsure of what their plans were, comprised the largest proportion (31.84 and 27.15 percent, respectively) of the respondents. Only 17.78 percent of the students indicated plans to enter an agricultural occupation directly from high school. The military was indicated by 15.38 percent of the students as being in their future career plans. The smallest proportion (7.85 percent) of the students

indicated that they planned to work in a non-agricultural occupation.

The total mean scores and standard deviations for the various categories of career plans of students completing the APAT are also presented in Table 9. The scores ranged from a high of 34.29 for students planning to attend college to a low of 28.61 for individuals planning to enter a non-agricultural occupation.

TABLE 9

Career Plans After Graduation and
Mean Score on APAT According to Career Plans
N = 919

Career Plans	Number	Percent	Mean Score*	S.D.
Ag Occupation	165	17.78	32.51AB	10.37
Non-Ag Occupation	72	7.85	28.61C	10.63
College/Post High School Education	292	31.84	34.29A	10.15
Military	141	15.38	30.35BC	11.37
Unsure	249	27.15	30.91BC	10.44

* Mean scores with the same letter are not significantly different at the .05 alpha level.

A one-way analysis of variance was computed to determine if there were significant differences among mean scores on the APAT for the five categories of career plans. The analysis of variance results displayed in Table 10 resulted in an F value of 6.99, which was significant at the .0001 level.

Duncan's multiple range test was used to compare the mean scores for the five categories of career plans. The mean APAT scores of students who planned to attend college or post-secondary school were significantly higher than the scores of students who were unsure of their career plans, or those who planned to enter the military, or those who planned to enter a non-agricultural occupation. In addition, those who planned to enter a non-agricultural occupation scored significantly lower than students planning

to enter an agricultural occupation or attend college or post-secondary school.

TABLE 10

Analysis of Variance: Mean APRT Scores According to Career Plans
N = 919

Source	Sum of Squares	df	Mean Square	F	PR>F
Between Groups	3080.48	4	770.12	6.99	.0001
Within Groups	100526.51	912	110.23		
Total	103606.99	916			

Objective 3

The third objective was designed to determine whether or not the competencies identified in the Applied Principles Curriculum Guide (Panhandle Area Educational Cooperative and Florida Department of Education, 1980) were actually being taught by teachers participating in this study. Only teachers teaching a specific curriculum component were asked to respond to the competencies. Thus, each teacher would respond to the common core component and two specialized components. Appendix I contains data which reveal the number and percentage of respondents indicating whether or not each competency was included in their various Applied Principles programs.

Data in Table 11 identify the degree to which the 140 competencies included in the document A Suggested Curriculum Guide for Applied Principles of Agribusiness and Natural Resources Occupations (Panhandle Area Educational Cooperative and Florida Department of Education, 1980) were being taught by the teacher respondents in this study. It may be observed that 75 to 100 percent of the teachers taught 48.2 percent of the core competencies, 35.3 percent of the agricultural mechanics competencies, 75 percent of the

ornamental horticulture competencies, 52.4 percent of the forestry competencies, 25 percent of the agricultural production competencies, and 58.3 percent of the agricultural resources competencies. It is important to note that only those teachers who taught a component were asked to indicate whether or not they taught a competency. Table 12 provides a summary of the data found in Table 11. The data reveal that 65 (46.5 percent) of the competencies were taught by 75 - 100 percent of the teachers who taught a specific program area. Fifty-one competencies (36.4 percent) were taught by 50 - 74.9 percent of the teachers. Nineteen competencies (13.5 percent) were included in the program of 25 - 49.9 percent of the teachers. Only five (3.6 percent) of the competencies were taught by 0 - 24.9 percent of the teacher respondents.

TABLE 11

Degree to Which the Competencies in the Various Components of Applied Principles are Being Taught by Teachers

Percentage of Teachers Teaching the Competency	Number of Competencies	Percentage of Competencies
Core		
0 - 24.9	0	0
25 - 49.9	8	14.8
50 - 74.9	20	37.0
75 - 100	26	48.2
TOTAL	54	100.0
Agricultural Mechanics		
0 - 24.9	0	0
25 - 49.9	2	11.8
50 - 74.9	9	52.9
75 - 100	6	35.3
TOTAL	17	100.0
Ornamental Horticulture		
0 - 24.9	0	0
25 - 49.9	1	8.3
50 - 74.9	2	16.7
75 - 100	9	75.0
TOTAL	12	100.0
Forestry		
0 - 24.9	0	0
25 - 49.9	3	14.3
50 - 74.9	7	33.3
75 - 100	11	52.4
TOTAL	21	100.0
Agricultural Production		
0 - 24.9	0	0
25 - 49.9	5	20.8
50 - 74.9	13	54.2
75 - 100	6	25.0
TOTAL	24	100.0
Agricultural Resources		
0 - 24.9	5	41.7
25 - 49.9	0	0
50 - 74.4	0	0
75 - 100	7	58.3
TOTAL	12	100.0

TABLE 12

Degree to Which Applied Principles Competencies
Are Being Taught by Teachers

Percent of Teachers Teaching the Competency	Number of Competencies	Percent of Competencies
0 - 29.9	5	3.5
30 - 49.9	19	13.5
50 - 74.9	51	36.5
75 - 100	65	46.5
Total	140	100.0

Table 13 identifies the competencies by major instructional component identified by over 75 percent of the respondents as being included in their Applied Principles program. Eighteen competencies were identified in the core area of leadership and citizenship development and the smallest number were related to the core agricultural business management component with two competencies being identified.

TABLE 13

Competencies Identified by Over 75 Percent of Teachers As Actually Being Taught in Applied Principles Of Agribusiness and Natural Resources Education

COMPETENCY	PERCENT TEACHING THE COMPETENCY
CORE AGRICULTURAL BUSINESS MANAGEMENT COMPONENT	
1. The student will demonstrate knowledge necessary for developing an ongoing agricultural enterprise	89%
2. The student will demonstrate knowledge necessary for estimating costs and returns of an agricultural enterprise	77%
CORE AGRICULTURAL MECHANICS COMPONENT	
1. The student will identify and properly demonstrate use of shop and laboratory safety equipment	93%
2. The student will identify safety areas in the shop and cite their purpose	95%
3. The student will demonstrate proper use of power tools and equipment in the shop	82%
4. The student will demonstrate proper safety practices that apply to the power tools and equipment in the shop	86%
5. The student will perform a daily inspection on a tractor	75%
6. The student will demonstrate proper driving and handling techniques on selected tractor and tractor equipment	82%

Table 13 (Continued)

COMPETENCY	PERCENT TEACHING THE COMPETENCY
CORE LEADERSHIP AND CITIZENSHIP DEVELOPMENT COMPONENT	
1. The student will cite purpose of committees	89%
2. The student will serve effectively on a committee	95%
3. The student will list or identify different types of committees	84%
4. The student will give a committee report	82%
5. The student will state or describe purpose of the Program of Activities (POA)	91%
6. The student will list major divisions of POA	84%
7. The student will be able to suggest local activities for the POA	84%
8. The student will list major criteria to consider in choosing activities for POA	80%
9. The student will choose award programs appropriate to student's interest and SOEP	82%
10. The student will describe chapter award activities	75%
11. The student will recognize role of members and chairman of an organization	86%
12. The student will demonstrate how to handle and dispose of motions	93%
13. The students will apply their knowledge of conducting a meeting to other school and community groups	80%
14. The student will recognize citizen responsibilities	86%

Table 13 (Continued)

COMPETENCY	PERCENT TEACHING THE COMPETENCY
15. The student will conduct him/herself properly in different situations regarding citizenship	93%
16. The student will show respect for other views and opinions	95%
17. The student will choose a topic for an oral report	75%
18. The student will give an oral report	77%
AGRICULTURAL MECHANICS COMPONENT	
1. The student will demonstrate ability to properly set up, start, and stop power tools selected in the shop	95%
2. The student will demonstrate safety procedures on selected equipment and hand tools in the shop	95%
3. The student will demonstrate proper settings for electric welder, demonstrate the ability to select the proper welding rod for welding a selected project, and demonstrate the ability to weld in flat, vertical, and overhead positions according to prescribed standards	86%
4. The student will demonstrate the proper technique in brazing, cutting, and bending selected metal stock or plate using an oxyacetylene welding system according to prescribed standards	82%
5. The student will demonstrate ability to attach selected equipment to power units (Tractor PTO)	86%
6. The student will determine maintenance problems and make minor repairs to buildings and equipment	86%

Table 13 (Continued)

COMPETENCY	PERCENT TEACHING THE COMPETENCY
ORNAMENTAL HORTICULTURE COMPONENT	
1. The student will mix soil media according to standards specified by the instructor	87%
2. The student will: a) develop a management program to maximize production in greenhouses, and b) identify and list typical houseplants that can be grown within the facilities available	83%
3. The student will prepare soil and seedbed according to requirements for specific bedding plants	83%
4. The student will transplant selected plants according to recommended practices	87%
5. The student will properly identify selected bedding plants	77%
6. The student will be able to water, fertilize, and follow other cultural practices needed for horticultural plants	91%
7. The student will demonstrate ability to: a) propagate plants by seed, cutting, or layering according to specific standards and evaluate survival rate, and b) make appropriate grafts and buds and evaluate survival rate	83%
8. The student will transplant, pot, and care for rooted cultures and seedlings according to accepted standards	87%
9. The student will demonstrate ability to follow correct procedures in planting nursery stock	83%

Table 13 (Continued)

COMPETENCY	PERCENT TEACHING THE COMPETENCY
FORESTRY COMPONENT	
1. The student will list eight benefits of forest resources to man	83%
2. The student will list forest agencies, organizations, etc (particularly local)	100%
3. The student will list local occupational areas in forestry	100%
4. The student will list and be able to explain "multiple uses of forests"	83%
5. The student will describe the different methods of planting seedlings and calculate the cost and time it will take	83%
6. The student will: a) determine and demonstrate proper procedure to follow to obtain seedlings from state nurseries, and b) determine and demonstrate proper way to handle seedlings	83%
7. The student will determine and demonstrate selected safety practices to follow in timber management	83%
8. The student will list selected types of recreation in forestry	83%
9. The student will identify selected forest trees according to leaf, flower, fruit, twig, bark, taste, smell, etc.	83%
10. The student will identify causes of fire according to statistics from forestry resources	83%

Table 13 (Continued)

COMPETENCY	PERCENT TEACHING THE COMPETENCY
11. The student will: a) find the township and range on a local map for selected areas on the map, b) use compass to determine azimuth and bearings, measurements or direction, c) understand how to set up a transit compass and level four corners, d) determine distance along selected property lines in chains and determine acres of land, e) use a biltmore stick and determine board feet for saw timber and cubic feet for pulpwood, and f) determine cords of wood from selected trees using a biltmore stick and conversion charts	83%
AGRICULTURAL PRODUCTION COMPONENT	
1. The student will identify control measures for insects attacking crops	77%
2. The student will identify control measures for crop diseases	80%
3. The student will select appropriate cultural practices for crops	88%
4. The student will fertilize crops according to recommended practices	97%
5. The student will practice safety when applying pesticides	91%
6. The student will demonstrate the use of major farm machinery units such as plows, discs, and mowers	77%
AGRICULTURAL RESOURCES COMPONENT	
1. The student will identify selected commercial species of trees either from a collection of leaves, slides, or on a field trip	100%

Table 13 (Continued)

	COMPETENCY	PERCENT TEACHING THE COMPETENCY
2.	The student will demonstrate the ability to plant selected species of trees according to recommendations	100%
3.	The student will follow a management plan and explain long range practices needed to correct or improve selected forest area	100%
4.	The student will identify selected wildlife from films, slides, pictures, etc.	100%
5.	The student will: a) select and/or describe the proper habitat for selected species of wildlife from films, slides, field trips, etc. and 2) make management plans to improve wildlife habitat (cover, food, and nesting) for selected areas	100%
6.	The student will select the proper federal and state regulations for selected areas in wildlife management	100%
7.	The student will identify selected fish from slides, films, pictures, etc.	100%

The number of competencies identified by over 75 percent of the teachers as being included in their programs were compared with the total number of competencies identified in the curriculum guide. Data in Table 14 reveals that 75 percent of the competencies in the area of ornamental horticulture were identified by 75 percent or more of the teachers as being included in their program. Leadership had the highest proportion (78.3 percent) of competencies being taught by 75 percent or more of the teachers. Just over one-half of the forestry and agricultural resources competencies were indicated by the

teachers as being included in their program. Little more than one-third of agricultural mechanics and agricultural mechanics core competencies were being taught by 75 percent or more of the teachers responding to this study. Twenty-five percent of the agricultural production competencies and only 14.3 percent of the agricultural business management competencies were being taught by more than 75 percent of teachers responding in this study.

Table 14

Percentage of Competencies* By Content Area Identified By More Than 75 Percent of Teachers As Being Included In The Applied Principles Program

Content Area	Total Number of Competencies	Number of Competencies Identified by 75% of the teachers	Percent
Core	54	26	48.2
Agricultural Business Management	14	2	14.3
Agricultural Mechanics	17	6	35.3
Leadership	23	18	78.3
Agricultural Mechanics	17	6	35.3
Ornamental Horticulture	12	9	75.0
Forestry	21	11	52.4
Agricultural Production	24	6	25.0
Agricultural Resources	12	7	58.3
Total	140	65	46.4

* Identified in A Suggested Curriculum Guide for Applied Principles of Agribusiness and Natural Resource Occupations.

CONCLUSIONS

The central purpose of this study was to assess the level of mastery of students enrolled in Applied Principles of Agribusiness and Natural Resources Occupations during the 1982-83 school year. In addition, this study sought to

sought todetermine which recommended competencies were in fact being taught by teachers. The data were collected from 1039 students and 44 teachers of agriculture.

Objective One

1. Students' level of mastery on the 60 item APAT was slightly over 52 percent correct.

2. Students performed best on the APAT questions related to the core component (agricultural business management, agricultural mechanics, leadership and citizenship) with a percentage correct score of 61.75, and agricultural production with a percentage correct score of 55.70, and agricultural resources with 50.03 percent correct responses. Performance was poorest in the areas of ornamental horticultural (44.05 percent correct), agricultural mechanics (41.25 percent correct), and forestry (40.55 percent correct).

Objective Two

1. Over 85 percent of the students completing the APAT were in the tenth and eleventh grade.

2. Students in the tenth, eleventh, and twelfth grade score significantly higher on the APAT than did ninth graders. The respective percentage scores on the APAT were 53.5, 56.8, 55.2, and 42.9.

3. Approximately 80 percent of the students taking the APAT had previously been enrolled in an agricultural class. There was no significant difference between mean score on the APAT for those students who were previously enrolled in an agricultural class and those who were not. Almost 75 percent of the responding students were members of the FFA.

Almost 75 percent of the responding students were members of the FFA.

4. Students taking the APAT who were currently members of the FFA scored significantly higher on the APAT than students who were not in FFA.

5. Of the students taking the APAT, 64.8 percent indicated some involvement in supervised occupational experiences. In addition, those involved in SOE scored significantly higher on the APAT than those who indicated no involvement.

6. Students who planned to attend college or post-secondary school scored significantly higher on the APAT than students who were unsure of their career plans, or those who planned to enter the military, or those who planned to enter a non-agricultural occupation. There was not a significant difference between students who planned to enter an agricultural occupation and those with plans for post-secondary school education. In addition, those students planning to enter an agricultural occupation scored significantly higher than those students planning to enter a non-agricultural occupation.

7. Almost 60 percent of the students surveyed, either planned to continue their education after high school or did not have specific career plans. Approximately 18 percent planned to enter an agricultural occupation and less than 8 percent planned to enter a non-agricultural occupation.

Objective Three

1. Sixty-five of the competencies (46.5 percent) were taught by 75 - 100 percent of the teachers and 51 competencies (36.4 percent) were taught by 50 - 74.9 percent of the teachers.

2. Seventy-five percent or more of the teachers indicated that they included in their Applied Principles curriculum the following percentage

of the recommended competencies by content area: core, 48.2 percent; agricultural mechanics, 35.3 percent; ornamental horticulture, 75.0 percent; forestry, 52.4 percent; agricultural production, 25 percent; and agricultural resources, 58.3 percent.

RECOMMENDATIONS

Based upon the data collected, analyzed, and reported herein, the investigators make the following recommendations:

1. In light of the fact that less than 50 percent of the competencies specified in the curriculum guide were being taught by 75 percent or more of the teachers and the percentage test score on the APAT was approximately 52 percent, emphasis should be given to strengthen instruction in Applied Principles. Strategies for strengthening this program might include but is not limited to: (1) inservice educational activities designed to improve the competencies of teachers related to the instructional components of Applied Principles; (2) special attention by Department of Education regional consultants for vocational agriculture during the program review process to note deficiencies related to competencies not included in the instructional program; (3) increased attention at the pre-service level to emphasize the structure of Applied Principles and the competencies to be taught; (4) a review of the Applied Principles Curriculum Guide by teachers, advisory committee members, regional consultants, vocational directors, teacher educators, and others to make certain that the competencies contained therein are appropriate; (5) and instructional materials should be developed or adapted to assist teachers in teaching the competencies included in the Curriculum Guide.

2. Teachers of agriculture who teach Applied Principles should encourage all students to be members of the FFA chapter and to become actively involved with apropriate supervised occupational experiences. This

recommendation is made because of the significantly higher mean scores on the APAT by students who were FFA members and who also indicated involvement with supervised occupational experiences.

Recommendations for Further Study

1. Assess students' level of mastery of the competencies that teachers indicate they are including in the Applied Principles program should be conducted.

2. Compare students' performance on the APAT administered at the beginning of the school year with performance at the end of the year.

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APPENDIX A

October 14, 1983

Name
School
Street Address
City, State, Zip Code

Dear_____:

We have recently developed and are now in the process of field testing several "tests" to help measure what students have learned in Fundamentals of Agricultural Occupations (3710) and Applied Principles of Agricultural Occupations (3720). This effort is designed to provide information that will be useful in determining instructional material needs, possible curricula modifications, and to measure how well these courses are accomplishing their objectives. The tests are directly related to the competencies that are outlined in the curriculum guides for these two courses.

It is our plan to administer these tests in April-May, 1982, to students from a randomly selected sample of schools in Florida. If you agree to participate and your school is randomly selected, you will be mailed tests in April which are to be administered to either your Applied Principles or Fundamentals classes.

Your classes' test results will be grouped with those from other schools; therefore, neither your classes nor your school will be identified. All information regarding your school will be kept confidential. However, we can provide you with a copy of the results of the tests for your students if you so desire.

If this activity is to be successful, we need your help! Enclosed you will find a one page survey form that we are asking you to complete and return to us. We hope that you will be willing to participate in this study.

Sincerely,

Max B. McGhee
Associate Professor

Jimmy G. Cheek
Associate Professor

MBM/JGC/ldk

34

APPENDIX B

January 28, 1983

Dear Colleague:

Several weeks ago we wrote you regarding the development of "tests" to measure what students have learned in Fundamentals of Agricultural Occupations (3710) and Applied Principles of Agricultural Occupations (3720). This effort is designed to provide information that will be useful in determining instructional material needs, possible curricula modifications, and to measure how well these courses are accomplishing their objectives. The tests are directly related to the competencies that are outlined in the curriculum guides for these two courses.

It is our plan to administer these tests in April-May, 1983, to students from a sample of schools in Florida. If you agree to participate, you will be mailed tests which are to be administered to either your Applied Principles or Fundamentals classes. Your classes' test results will be grouped with those from other schools; therefore, neither your classes nor your school will be identified. All information regarding your school will be kept confidential. However, if you desire we can provide you with a copy of the results of the tests for your students; you might want to use it as part of a final exam grade.

From our first letter we have received a strong positive response. However, we would like to broaden our study to include more schools and to do so we need your help. If you would be willing to participate in this study, please complete and return the enclosed form.

Sincerely,

Max B. McGhee
Associate Professor

Jimmy G. Cheek
Associate Professor

MBM:JGC:ldk

NAME_____

SCHOOL ADDRESS_____

_____

SCHOOL PHONE NUMBER_____

1. Are you teaching Fundamentals of Agricultural Occupations (3710) this year? YES NO

2. Are you teaching Applied Principles of Agricultural Occupations (3720) this year? YES NO

3. Would you be willing to administer a test to your students near the end of the school year related to either of the above courses? YES NO

If you answered YES to item 3, please complete the following questions:

A. How many students and classes of Fundamentals and Applied Principles do you have?

	Number of Classes	Number of Students
Fundamentals	_____	_____
Applied Principles	_____	_____

B. In Applied Principles, which of the following areas do you teach in addition to the "core" competencies? The "core" competencies relate to agricultural mechanics, agricultural business management, and leadership. (Check appropriate response).

		Number of Students
Agricultural Production	_____	_____
Agricultural Mechanics	_____	_____
Forestry	_____	_____
Ornamental Horticulture	_____	_____
Agricultural Resources	_____	_____
Agricultural Products	_____	_____
Agricultural Supplies and Services	_____	_____

APPENDIX C

1. Based on the "Return Per $100 Investment" table below, a farmer with $1000 to invest in his farm business should invest the most in:

   A. Bonds
   B. Buildings
   C. Machinery
   D. Dairy Equipment

Returns Per $100 Investment

	Capital	Bonds	Building	Machinery	Dairy Equipment
1st	$100	$104	$155	$158	$170
2nd	$100	104	148	143	160
3rd	$100	104	136	139	151
4th	$100	104	115	135	140
5th	$100	104	100	130	136

2. What is the added return above the cost of the second 60 lb. unit of nitrogen added?

   A. $20.00
   B. $15.00
   C. $ 5.00
   D. No added Return

USE THIS TABLE TO ANSWER QUESTION 2

Effect of Nitrogen on Corn

Lbs. N Applied	Yield (Bushels)	Added Yield for 60 lbs. N	N Cost at $.25/lb. for adding 60 lb. N	Added Yield $2.50/bu.	Added Return Above N Cost
0	65	0	0	0.00	—
60	100	35	15	87.00	$20
120	130	30	15	75.00	15
180	150	20	15	50.00	5
240	170	20	15	50.00	5
300	165	-5	15	-122.50	-10

3. Public sale of livestock usually sold in a sales ring on a particular day of the week to the highest bidder is a description of which of the following choices?

   A. Auction
   B. Terminal Market
   C. Cooperative Marketing
   D. Local Dealer

4. To develop a good credit rating, a person should:

   A. Pay for everything in cash immediately
   B. Apply for as many credit cards as possible
   C. Take out a small term loan and repay it according to the payment plan
   D. Charge everything and do not pay until you receive the overdue payment notice

5. When developing a personal budget for the upcoming year, consider all of the following choices except:

   A. How to make income meet all expenses
   B. How to spend more than earned by using credit
   C. How to save a little money each month
   D. How to be economically prepared for emergencies

6. A $16,000 loan for a combine at 8 1/2 percent simple interest is to be paid in 4 equal payments over a 4-year period. How much will the first payment be after one year including both principal and interest?

   A. $4,000
   B. $5,360
   C. $5,880
   D. $6,400

7. Which one of the following types of business is owned by the stock holders?

   A. Individual Ownership
   B. Partnership
   C. Corporation
   D. Cooperative

8. For class B and C fires, which of the following extinguishers should NOT be used?

   A. Pressurized H_2O
   B. Dry chemical
   C. CO_2

9. Which of the following tools is used to straighten a grooved, rounded or out-of-round grinding wheel?

   A. Cold chisel
   B. Tool rest
   C. Wheel dresser

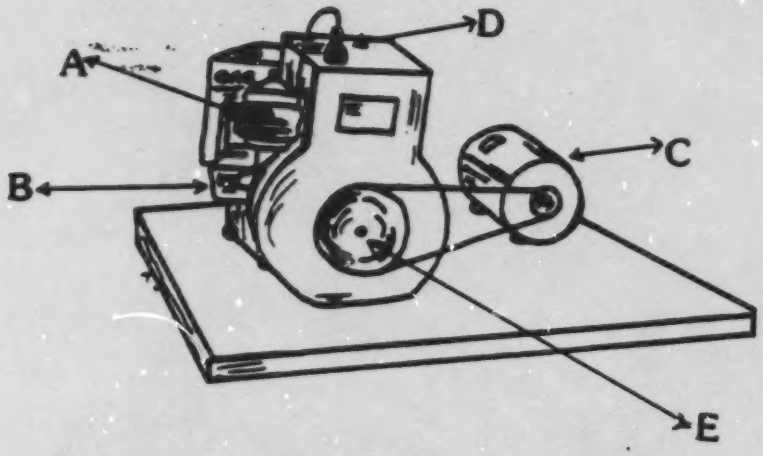
10. When using a bench saw, which of the following devices is used as a guide when cross cutting?

   A. Ripping fence
   B. Miter gage
   C. Push stick
   D. Arbor

11. For any cutting tool, the blade should be sharpened:

   A. Once a day
   B. Once a week
   C. Once a month
   D. Whenever it seems to be dull

12. Which of the following parts (A, B, C, D, or E) is the crankshaft?

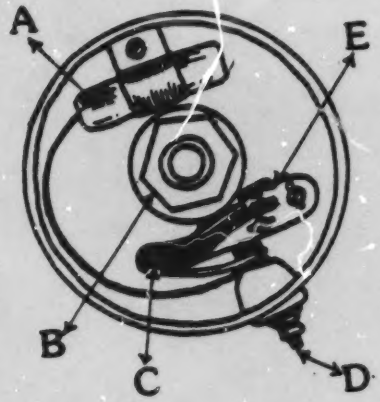


13. Which of the following causes the spark plug to fire when it opens?

   A. Coil
   B. Battery
   C. Breaker points
   D. Condenser
   E. Voltage regulator

14. The arrow points to which of the following parts of a tractor's ignition system?

A. Cam
B. Condenser
C. Breaker points
D. Pivot post
E. Primary terminal



15. To be an effective committee member, one should possess which of the following characteristics?

A. Try to increase political power by taking credit for the work of the committee.
B. Enter discussions that are only related to your own self interests.
C. Listen to the opinions of other committee members before making a voting decision.

16. A student interested in studying the economic characteristics of farming should enter which of the following FFA contests?

A. Livestock
B. Farm Business Management
C. Public Speaking
D. Floriculture

17. Which of the following examples of a basic meeting agenda lists the correct order of events for a FFA Chapter meeting?

A. Opening Ceremony
Minutes of Previous Meeting
Old Business
New Business
Closing Ceremony

B. Opening Ceremony
New Business
Old Business
Minutes of Previous Meeting
Closing Ceremony

C. Opening Ceremony
Old Business
Minutes of Previous Meeting
New Business
Closing Ceremony

18. The Treasurer must:

A. Prepare and read minutes of meetings
B. Coordinate the work of a committee
C. Collect dues
D. Coordinate the work of all committees
E. Call the meeting to order

19. A division of the house is called to:

A. Determine the accuracy of a vote
B. Continue discussion
C. Stop discussion
D. Enforce a rule
E. Suspend standing rules

20. Which of the following examples is the best outline for an oral report?

A. Introduction
Content of report
Conclusion
Questions from the audience

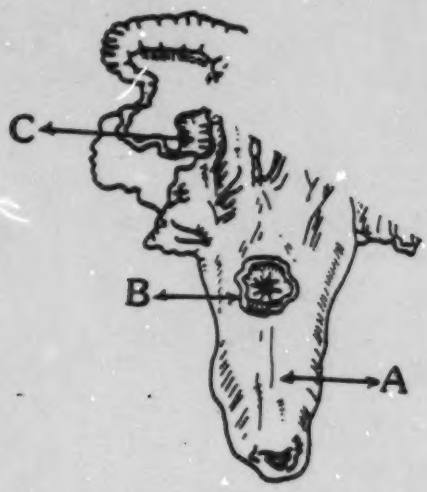
B. Introduction
Questions from the audience
Content of report
Conclusion

C. Introduction
Content of report
Questions from the audience
Conclusion

21. Roughage is a type of feed that is:

A. High in fats
B. High in fiber
C. High in digestibility
D. Low in protain

22. Organ C in the diagram below is named:

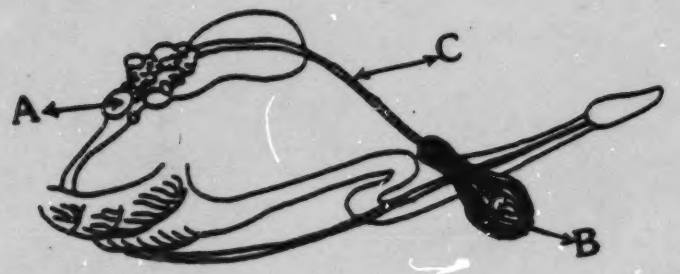


A. Vagina
B. Cervix
C. Uterus
D. Ovary

23. The process of ovulation means:

A. Union of an egg and sperm
B. Birth of a newborn animal
C. Release of a mature egg into the oviduct
D. Actual mating of two animals

24. The name of Organ B in the diagram below is:



A. Testicle
B. Glans Penis
C. Vas Deferens
D. Prostate Glands

25. The organ in a bull's reproductive tract which produces the sperm cells is called the:

A. Testicle
B. Vas Deferens
C. Prostate Gland
D. Glans Penis

26. A farmer or rancher can insure himself of a good supply of organic matter and the three nutrients — nitrogen, phosphorus, and potassium, if he will build which of the following structures?

A. A trench silo
B. A feed alley
C. A manure pit
D. A farrowing shed

27. A steer that gains 4 pounds per day on the average would have a rate of gained weight that is:

A. High
B. Medium
C. Low
D. Not Possible

28. Which one of the following pictures of tagging, dehorning, and castrating equipment, is the Bull Leads?

A

B

C

D

A. a
B. b
C. c
D. d

29. Which of the following methods is a means of natural control of insects?

A. Climatic factors
B. Soil type
C. Control by natural enemies
D. All of the above

30. Avoiding plant disease by planting when and where the pathogens are ineffective or absent is called:

A. Avoidance
B. Exclusion
C. Eradication
D. Protection
E. Resistance

31. What is a herbicide?

A. A treatment given to counteract the effects of a poison.
B. A pesticide that must be diluted before application.
C. An agricultural chemical used to control unwanted plants.
D. A chemical that destroys nematodes.

32. Which of the following is used to correct the pH of an acid soil?

A. Gypsum
B. Lime
C. Calcium
D. Phosphorus

33. Which of the following is NOT a primary plant nutrient?

A. Nitrogen
B. Potassium
C. Calcium
D. Phosphorus

34. When working with pesticides, which of the following pesticide handling statements is FALSE?

A. Reading and following label instructions.
B. Wearing appropriate safety equipment.
C. Transferring pesticides to handy containers.
D. Posting signs in sprayed areas showing the earliest date that the crop can be harvested or the field entered.

35. Which of the following is NOT necessary for a complete crop production record?

A. Number of acres planted
B. Percent germination of seed
C. Total amount of grain produced
D. Amount of fertilizer applied

36. To determine the average yield of corn per acre, a farmer must use each of the following figures EXCEPT:

A. Number of bushels produced
B. Number of pounds of seed planted per acre
C. Number of acres planted in corn

37. The kind of insurance that insures against accidents which happen to farm workers and is backed by the Federal Government is called:

A. General Liability
B. Blanket Coverage
C. Social Security
D. Workman's Compensation

38. A decline in value of an asset over its useful life associated with use, age, and obsolescence is known as:

A. Appreciation
B. Depreciation
C. Inventory
D. Hedging

39. If a tractor is giving off black smoke from the exhaust pipe when under a heavy load, the fuel mixture is:

A. Too lean
B. Too rich
C. Just right
D. Cannot tell from this information

40. Using the following chart, how many quarts of antifreeze are required for a tractor with a cooling system capacity of 18 quarts if the desired protection temperature is -10 degrees?

A. 5 quarts
B. 6 quarts
C. 7 quarts
D. 8 quarts

FREEZING PROTECTION TABLE

Cooling System Capacity in Quarts	"Permanent" Antifreeze Required								
	1	2	3	4	5	6	7	8	9
5	16	-12	-63						
6	19	0	-34						
7	22	7	-17	-54					
8	23	11	- 7	-34	-69				
9	24	14	0	-21	-50				
10	25	16	4	-12	-34	-62			
11	26	18	8	- 6	-23	-47			
12		19	10	0	-15	-34	-57		
13		21	13	3	- 9	-25	-45	-66	
14			15	6	- 5	-18	-34	-54	
15			16	8	0	-12	-26	-43	-62
16			17	10	2	- 8	-19	-34	-52
17			18	12	5	- 4	-14	-27	-42
18			19	14	7	0	-10	-21	-34
19			20	15	9	2	- 7	-16	-28
20				16	10	4	- 3	-12	-22
21				17	12	6	0	- 9	-17
22				18	13	8	2	- 6	14

41. Which of the following practices should be considered when evaluating a greenhouse and related facilities?

A. Total square feet of greenhouse
B. Watering system
C. Storage space for equipment and supplies
D. All of the above

42. Which of the following safety practices would be the most important, even for a small commerical greenhouse?

A. Separate equipment storage
B. Lockable, vented chemical storage locker
C. A mulched floored shade house
D. A concrete floored greenhouse

43. Which one of the following ingredients would NOT be a good choice for a potting medium?

A. Perlite
B. Clay
C. Vermiculite
D. None of the above

44. Which of the following materials is critical for potting media and field sterilization with methyl bromide?

A. Tractor with pressure pump
B. Hollow-tined cultivating chisels
C. Black mulching plastic
D. Roto-tiller

45. Identify the houseplant pictured from the list below.

A. Begonia
B. Purple Passion
C. Bromeliad
D. Wandering Jew

46. Identify the houseplant pictured from the list below.

A. Bishop's cap
B. Ribbon Plant
C. Aloe
D. Old Man Cactus

47. When sowing medium to large seed for the propagation of bedding plants one should:

A. Sow the seed lightly in rows
B. Broadcast seed over the whole seedbed
C. Sow the seed heavily in rows
D. None of the above

48. Trees and shrubs should be transplanted:

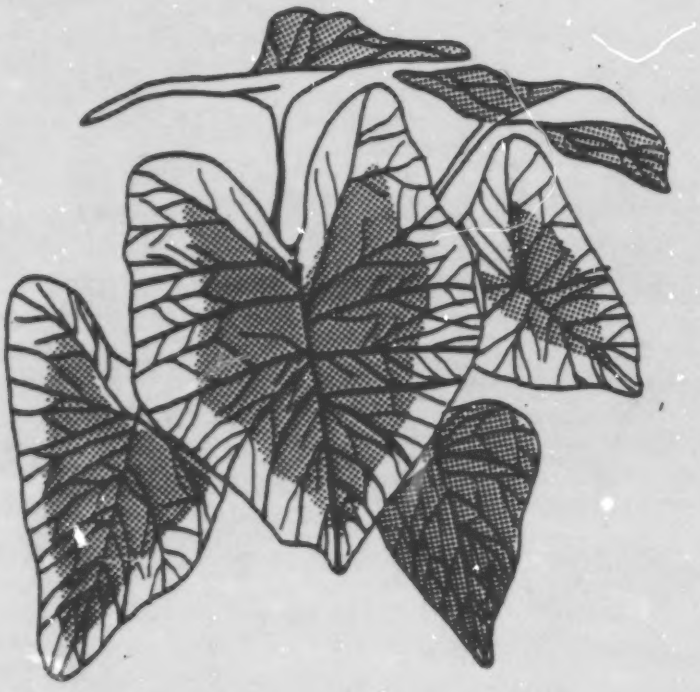
A. One half inch lower than in container
B. Same depth as in container
C. One inch lower than in container
D. One inch higher than in container

49. Identify the bedding plant pictured from the list below.

A. Carnation
B. Dusty Miller
C. Petunia
D. Rose

50. Identify the bedding plant pictured from the list below.

A. Begonia
B. Petunia
C. Carnation
D. Caladium



51. Identify the bedding plant pictured from the list below.

A. Geranium
B. Coleus
C. Petunia
D. Gladiolus

51

52. The advantage(s) of a drip or trickle watering system in the greenhouse is (are):

A. Water is supplied to individual containers
B. Less evaporation and humidity
C. Less water used
D. All of the above

53. What is the most common method used in Florida for cooling greenhouses?

A. Top vents
B. Exhaust fans
C. Exhaust fans and evaporative pads
D. None of the above

54. The genetic characteristics of plants propagated from cuttings:

A. Are different than the parent plant
B. Vary from plant to plant
C. Are the same as the parent plant
D. Are superior to the parent plant

55. If 750 azaleas were potted out of 1,000 cuttings which were placed in the rooting media, what is the survival rate?

A. 7.5%
B. 25%
C. 35%
D. 75%

56. Applying water early enough in the day so that the seedling leaves dry before nightfall will help prevent:

A. Heading back
B. Damping off
C. Pinching off
D. Pricking off

57. When transplanting rooted cuttings, why should they be kept in the upright position and transplanted immediately?

A. To keep soil on roots
B. To prevent the roots from being exposed to air and drying
C. To prevent the tops from being broken
D. All of the above

58. The standard method for transplanting large shrubs and medium and large trees from the ground to a landscape site without exposing their root system is called:

A. Spading
B. Digging
C. Banding
D. Balling and Burlapping

59. If the toe of the plowshare is lower than the heel, the plow will:

A. Not stay deep enough
B. Tend to plow too deeply
C. Not plow straight
D. Not completely turn the plow slice

60. Which of the following factor(s) affect the rate of seeding?

A. Type of grass
B. Desired thickness of stand
C. Soil moisture and fertility
D. All of the above

AGRICULTURAL MECHANICS COMPONENT

41. What is the name and function of the drill bit pictured below?

A. Auger bit for drilling brass
B. Twist drill bit for drilling mild steel
C. Expansive bit for drilling wood
D. Fastener bit for drilling mild steel

42. When using a table vise to replace handles in hand tools, which of the following practices should be followed?

A. Vise should be tightened as much as possible
B. Handle should be soaked in water first
C. Handle should be coated with warm soybean oil
D. Vise jaws should be covered with sheet metal or wood blocks

43. The first step before drilling, cutting, or sawing used stock is to:

A. Secure stock
B. Check for nails, tacks, etc.
C. Make proper adjustments
D. Remove guards

44. To prevent the breaking of drill bits while drilling hard materials, always drill:

A. In the vertical position
B. Pilot holes
C. In the horizontal position
D. With 2 twist drill bit

45. What is the inch to foot ratio when a project is drawn to 1/4 scale?

A. 4 inches on diagram equals 1 foot on project
B. 4 inches on diagram equals 4 feet on project
C. 1 inch on diagram equals 4 feet on project
D. .25 inches on diagram equals 4 feet on project

46. How many <u>board feet</u> are in a 1" x 12" x 24" board?

A. 1 board foot
B. 2 board feet
C. 4 board feet
D. 12 board feet

47. Which of the following is the important <u>first step</u> when soldering?

A. Clean the surface(s)
B. Apply the proper flux
C. Apply a coat of solder
D. Evenly heat surface(s)

48. A three-way switch has:

A. 3 brass poles
B. 2 silver poles
C. 3 silver poles
D. 1 silver pole

49. How many part(s) of cement is (are) added to a 1:2:4 mixture?

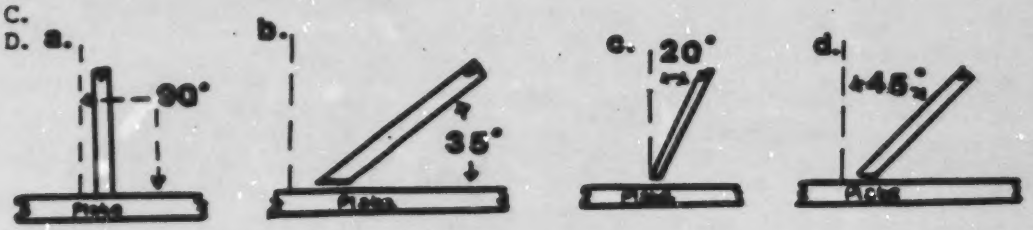
A. 1
B. 2
C. 4
D. 7

50. What is the recommended turn of a wheel cutter handle per revolution of pipe?

A. 1/32
B. 1/4
C. 1/2
D. 3/4

51. Which of the diagrams pictured below, shows the correct angle of the electrode while striking an arc with the tapping method?

A.
B.
C.
D.



52. What is the correct amperage range for a 1/8" electrode?

A. 70 to 120
B. 120 to 170
C. 140 to 240
D. 220 to 270

53. How is flux applied during brazing?

A. Flux is not used when brazing
B. Flux is a sticky paste and will stick to the rod
C. Pour 1/4" line of flux along area to be welded
D. Heat bronze rod and dip into flux

54. Which of the following is the most important point to remember when lubricating a tractor?

A. Wipe fitting
B. Always use full grease gun
C. Always pump grease gun 5 times
D. It is unnecessary in cold weather

55. Which of the following timing methods is used while the tractor engine is stopped?

A. Generator timing method
B. Timing light method
C. Breaker point method
D. Alternator timing method

56. Which of the following situations would cause the temperature light to turn on?

A. High engine speed
B. Bad thermostat
C. Low coolant level
D. both B and C

57. Which of the following links should be attached first during proper three-point hitch hook-up?

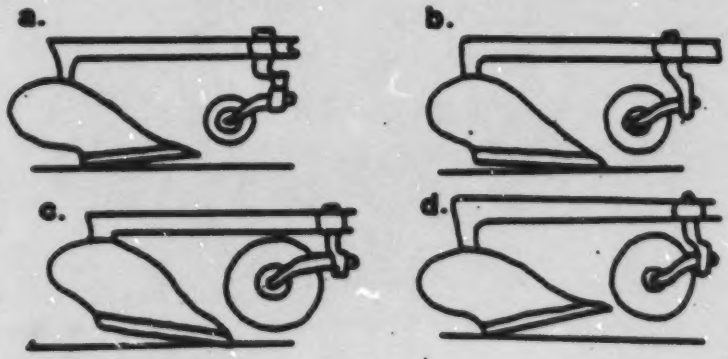
A. Upper link
B. Right link
C. Left link
D. Either A or C

58. Which of the following planters would use a fluted and/or ripple coulter?

A. Bed planter
B. Strip rotary tillage planter
C. Lister planters
D. No-till planter

59. Which one of the following illustrations, shows the correct adjusted position for a moldboard plow (disregard coulter size)?

A.
B.
C.
D.



60. Refer to the diagram below. Which of the following identifies the width of a V-belt?

d. WIDTH = b+c

FORESTRY COMPONENT

41. Which of the following would be beneficial resources provided by a forest?

A. Prevents soil erosion
B. Prevents wind erosion
C. Provides recreation
D. All of the above

42. What is the Federal department that regulates America's agricultural industry, which includes all Federal, regional, state, and county divisions of forestry?

A. US Forest Service
B. USDA
C. American Forest Service
D. American Forest Institute

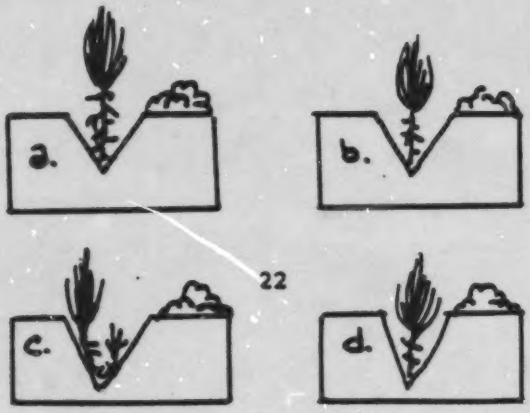
43. Which of the following is an employment opportunity in the forest industry?

A. Forester
B. Consultant
C. Wildlife Officer
D. All of the above

44. What is the most important use of forest lands to private forest industries?

A. Hunting
B. Recreation
C. Timber harvesting
D. Livestock grazing

45. Which of the following illustrations demonstrates the correct planting depth for seedlings?



22

46. What is the season for broadcast planting of pine seeds in Florida?

A. Winter
B. Spring
C. Summer
D. Fall

47. Which of the following is very important concerning the proper methods of handling seedlings?

A. Plant as soon as possible
B. Prevent root exposure to air
C. Bundles should not be opened until the temperature is above freezing
D. All of the above

48. Which of the following is NOT considered to be a type of recreation in forestry?

A. Fishing
B. Sailing
C. Hunting
D. All of the above

49. Which of the following Florida habitats now maintain the known population of Florida panthers?

A. Everglades National Park
B. Ocala National Forest
C. St. John's River Valley
D. None of the above

50. Bark is light gray, leaves are alternate, thick, and leathery with spiny teeth. Fruit is a dull red or yellow berry.

A. Round Holly
B. American Holly
C. Chinese Holly
D. Yaupon Holly

51. What is the cause of 91 percent of Florida's forest fires?

A. Lightning
B. Natural drought conditions
C. Man
D. Power lines

52. What class (type) of forest fire burns the organic materials beneath the leaf litter on the forest floor?

A. Crown
B. Ground
C. Surface
D. Flash

53. You are managing a 12 year stand of slash pine, which of the following fire prevention measures would reduce the damage by fire while increasing feed for wildlife?

A. Proper control burning
B. Dividing the tract into many small plots with firebreaks
C. The seeding of clouds, to make it rain
D. Maintain a team of fire fighters to fight fires by direct methods

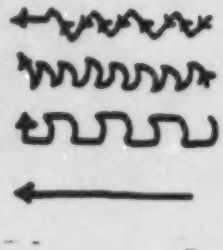
54. Which of the following is one of the three methods of fighting fire?

A. Rob the fire of material to burn
B. Reduce the fire's temperature
C. Cut off the oxygen
D. All of the above

55. Which of the following diagrams is the correct motion to use while sharpening an axe on a grinder?

A.
B.
C.
D.

a.
b.
c.
d.



56. Identify the forest insect pest pictured.

A. Leaf Miner Adult
B. Tent Caterpillar Adult
C. Sycamore Lace Bug
D. Adphid
E. None of the above

57. Which of the following diseases is the most serious disease of red cedar, causing severe foliage loss and death of trees?

A. Cedar Apple Rust
B. Anthracnose
C. Fall Root Rot
D. Juniper Blight

The following conversions may be used in answering Question 58

1 mile = 80 chains
1 acre = 10 square chains
1 chain = 66 feet
1 cord = 4' x 4' x 8'
43,560 square feet = 1 acre
1 cord = 128 cubic feet
5,280 feet = 1 mile
Total cubic feet - 90 = cords

58. You have measured a tract of land to be 99 by 264 feet. What are the dimensions of this tract in chains?

A. 2 by 3 chains
B. 1 1/2 by 4 chains
C. 3 by 6 chains
D. 2 1/2 by 3 1/2 chains

59. Which of the following is a type of teeth found in chain saws?

A. Square-hooded
B. Cutter-raker
C. Round-hooded
D. All of the above

60. You just found a forest worker who faints when he tries to stand, is very weak, sweating heavy, has pale clammy skin, and has about normal body temperature. The forest worker has the symptoms of which of the following illnesses?

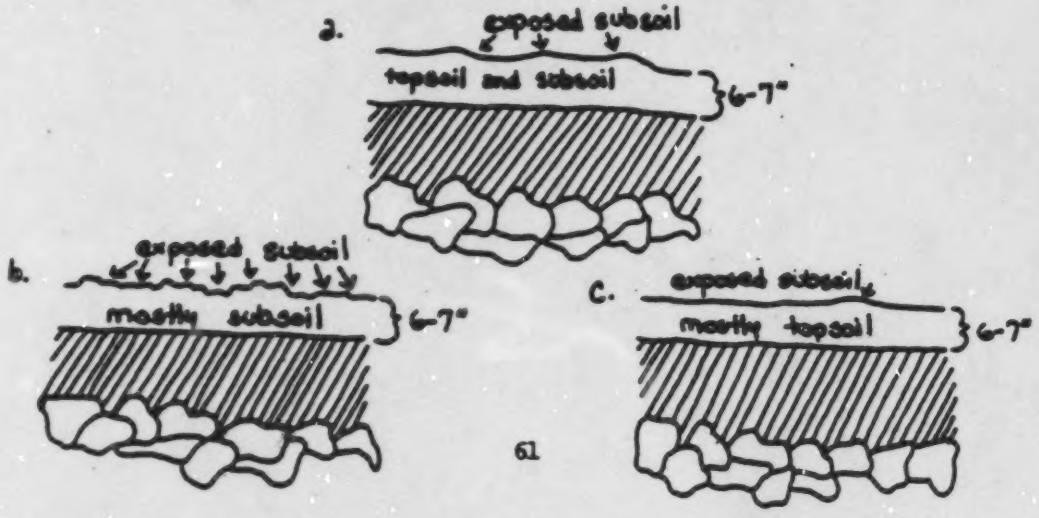
A. Heart stroke
B. Major stroke (apoplexy)
C. Heat exhaustion
D. Epilepsy

AGRICULTURAL RESOURCES COMPONENT

41. Water erosion occurs wherever water:

A. Is allowed to soak the soil
B. Is pumped in to irrigate crops
C. Runs off over the surface of the soil

42. Which diagram below shows moderate erosion?



61

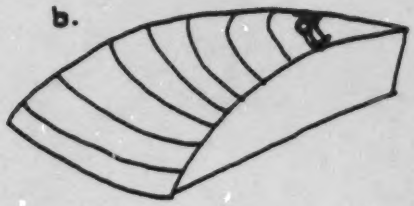
43. Hays and grasses are more effective than corn or cotton in controlling soil erosion because they:

A. Cover more of the soil for a longer period
B. Do not require irrigation
C. Are grown on land with less slope
D. Cause the land to level off after several years

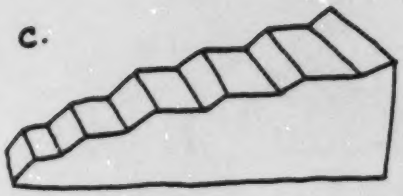
44. Which diagram of erosion control measures shows terracing?

a.

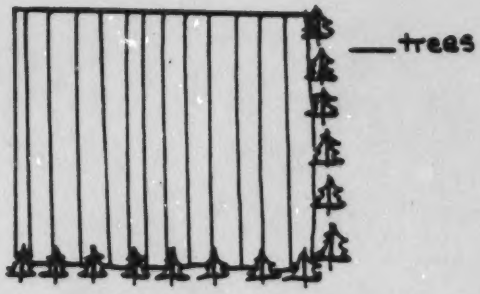
b.



c.



d.



45. Nutrients are most available to the plant at pH:

A. 2-3
B. 4-5
C. 6-7
D. 8-9

Match the correct pictures with the following list of important commercial trees:

a.

b.

46. Maple is choice _____

47. Oak is choice _____

48. Which of the following illustrations shows the correct depth to plant pine seedlings?

a.

b.

c.

d

49. During the planting operation of seedlings, which of the following practices should NOT be followed?

A. Removing from containers if air temperature is below freezing
B. Allowing to dry out
C. Doubling or folding in the planting hole
D. All of the above

50. Which of the following would you find in a management plan?

A. Estimate of income
B. Condition of the stand
C. Estimated growth rates
D. A map of the forest
E. All of the above

51. Goggles should be worn when:

A. There is dust in the air
B. Operating any machine
C. Operating or near any machine
D. Eyes become irritated

52. When operating woodlot equipment, clothes should be:

A. Loose fitting
B. Snug to the body
C. As lightweight as possible
D. Unbuttoned if too tight

53. The following animal is called a:

A. Cottontail rabbit
B. Eastern grey squirrel
C. Bobwhite quail
D. Gray wolf
E. Wild turkey

54. What animal prefers grasslands in summer and brush or woodlands in winter?

A. Gray fox
B. Eastern gray squirrel
C. Black bear
D. Cottontail rabbit

55. Where can bobwhite quail be found?

A. Brushland
B. Around ponds and streams
C. Grasslands
D. All of the above

56. What may hunting and fishing permits restrict?

A. The amount of a species killed
B. The size of a species killed
C. The amounts of males and females killed
D. All of the above

57. During the closed season of a certain animal, hunting of that animal is:

A. Allowed on private land only
B. Not allowed at all
C. "Closed" to those without licenses
D. "Closed" after a certain number are killed

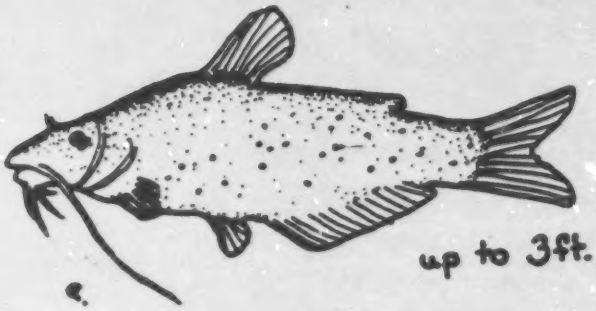
58. Siltation in ponds can be caused by:

A. Water run-off into the pond
B. Fishing the pond
C. Prolonged drought
D. Vegetation on the pond bottom

Use the pictures below to answer the following questions:

59. Choice _____ shows a Black Crappie

60. Choice _____ shows a Florida Gar



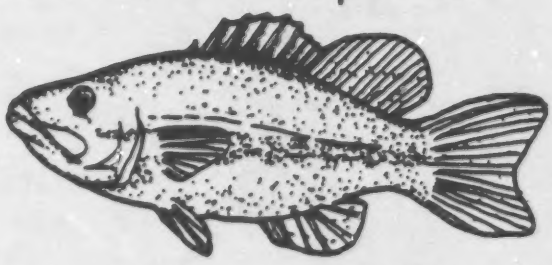
a.

b.

c.

d.

e.



OTHER INFORMATION

61. What grade are you in now?

A. 8th
B. 9th
C. 10th
D. 11th
E. 12th

62. Have you ever been in an agriculture class before this year?

A. Yes
B. No

63. Are you now a member of your school's FFA Chapter?

A. Yes
B. No

64. Do you have a supervised occupational experience project, such as raising a steer, growing a garden, or working at an agricultural job?

A. Yes
B. No

65. What do you plan to do after graduation from high school?

A. Work in an agricultural occupation
B. Work in a NON-agricultural occupation
C. Go to college (either community/junior or university), or some other type of post high school institution
D. Enter the military
E. Do not know

APPENDIX D

COMMON CORE COMPONENT

		YES This Competency IS Included	NO This Competency IS NOT Included
Agricultural Business Management			
1.	The student will demonstrate knowledge necessary for developing an ongoing agricultural enterprise.	YES	NO
2.	The student will demonstrate knowledge necessary for estimating costs and returns of an agricultural enterprise	YES	NO
3.	The student will demonstrate knowledge necessary for selecting a market for products of agricultural enterprises	YES	NO
4.	The student will define a good credit rating	YES	NO
5.	The student will develop a personal budget	YES	NO
6.	The student will make deposits, write checks, and balance a checkbook	YES	NO
7.	The student will determine insurance needs	YES	NO
8.	The student will list or describe available sources of agricultural credit, both private and governmental	YES	NO
9.	The student will determine the type of credit needed, long-term, intermediate-term, and/or short-term	YES	NO
10.	The student will compute interest rates	YES	NO
11.	The student will describe advantages and disadvantages, and list local examples of each of the following systems: Individual; Ownerships, Partnerships; Cooperatives; Corporations	YES	NO

		YES This Competency IS Included	NO This Competency IS NOT Included
12.	The student will list or describe agricultural agencies and the services they render	YES	NO
13.	The student will locate local agricultural agencies' offices	YES	NO
14.	The student will demonstrate the ability to utilize services of agricultural agencies	YES	NO

Agricultural Mechanics

1.	The student will identify and properly demonstrate use of shop and laboratory safety equipment	YES	NO
2.	The student will identify safety areas in the shop and cite their purpose	YES	NO
3.	The student will identify the different types of fires and identify the equipment used to extinguish various types of fires	YES	NO
4.	The student will identify injuries where simple first-aid can be administered and demonstrate techniques used in first-aid to care for the injury	YES	NO
5.	The student will demonstrate proper use of power tools and equipment in the shop	YES	NO
6.	The student will demonstrate proper safety practices that apply to the power tools and equipment in the shop	YES	NO
7.	The student will perform daily checks on selected equipment including lubrication, belts, chains, blades, guards, and damage	YES	NO
8.	The student will identify all parts of a small gas engine and describe their function	YES	NO

		YES This Competency IS Included	NO This Competency IS NOT Included
9.	The student will identify the parts of the ignition system and be able to service and/or replace parts including the battery, coil, starter, switch, spark plugs, points, conductors, condensor, alternator, voltage regulator, and generator	YES	NO
10.	The student will identify parts of the fuel system and service and/or replace parts	YES	NO
11.	The student will trouble-shoot small gasoline engines for minor problems and make repair or replacement of engine parts	YES	NO
12.	The student will perform a daily check on selected equipment powered by a small gas engine	YES	NO
13.	The student will perform daily inspection on a tractor	YES	NO
14.	The student will service the fuel system on a tractor engine	YES	NO
15.	The student will service the ignition system on a tractor engine	YES	NO
16.	The student will demonstrate use of service manuals for tractors and tractor equipment	YES	NO
17.	The student will demonstrate proper driving and handling techniques on selected tractor and tractor equipment	YES	NO

Leadership and Citizenship Development

1.	The student will cite purpose of committees	YES	NO
2.	The student will serve effectively on a committee	YES	NO

		YES This Competency IS Included	NO This Competency IS NOT Included
3.	The student will list or identify different types of committees	YES	NO
4.	The student will give a committee report	YES	NO
5.	The student will state or describe purpose of the Program of Activities (POA)	YES	NO
6.	The student will list major divisions of POA	YES	NO
7.	The student will be able to suggest local activities for the POA	YES	NO
8.	The student will list major criteria to consider in choosing activities for POA	YES	NO
9.	The student will choose award programs appropriate to students' interest and SOEP	YES	NO
10.	The student will properly complete awards applications	YES	NO
11.	The student will describe chapter award activities	YES	NO
12.	The student will prepare a meeting agenda	YES	NO
13.	The student will recognize role of members and chairman of an organization	YES	NO
14.	The student will demonstrate how to handle and dispose of motions	YES	NO
15.	The students will apply their knowledge of conducting a meeting to other school and community groups	YES	NO
16.	The student will recognize citizen responsibilities	YES	NO

		YES This Competency IS Included	NO This Competency IS NOT Included
17.	The student will conduct him/herself properly in different situations regarding citizenship	YES	NO
18.	The student will show respect for other views and opinions	YES	NO
19.	The student will complete job application forms	YES	NO
20.	The student will choose a topic for an oral report	YES	NO
21.	The student will prepare an outline for an oral report	YES	NO
22.	The student will give an oral report	YES	NO
23.	The student will defend the presentation of an oral report to peers	YES	NO

AGRICULTURAL PRODUCTION COMPONENT

1.	The student will formulate a ration for a specific class of animals	YES	NO
2.	The student will identify three major organs of the cow's reproductive tract	YES	NO
3.	The student will identify functions of each major organ in the cow's reproductive tract	YES	NO
4.	The student will identify three major organs of the bull's reproductive tract	YES	NO
5.	The student will identify functions of each major organ in the bull's reproductive tract	YES	NO
6.	The student will manage facilities related to animal production including waste disposal	YES	NO

		YES This Competency IS Included	NO This Competency IS NOT Included
7.	The student will analyze animal production records and data	YES	NO
8.	The student will develop and maintain breeding records	YES	NO
9.	The student will perform minor management practices (tagging, dehorning, castrating)	YES	NO
10.	The student will determine the best crop to grow on spucial land areas	YES	NO
11.	The student will identify control measures for insects attacking crops	YES	NO
12.	The student will identify control measures for crop diseases	YES	NO
13.	The student will plan a weed control program for crops	YES	NO
14.	The student will select appropriate cultural practices for crops	YES	NO
15.	The student will fertilize crops according to recommended practices	YES	NO
16.	The student will practice safety when applying pesticides	YES	NO
17.	The student will keep crop production records	YES	NO
18.	The student will analyze crop production records	YES	NO
1 .	The student will determine needs for insurance	YES	NO
20.	The student will plan labor and capital needs	YES	NO
21.	The student will identify marketing outlets	YES	NO

		YES This Competency IS Included	NO This Competency IS NOT Included
22.	The student will trouble-shoot for minor farm power and machinery problems	YES	NO
23.	The student will use service and repair manuals	YES	NO
24.	The student will demonstrate the use of major farm machinery units such as plows, discs, and mowers	YES	NO

ORNAMENTAL HORTICULTURE COMPONENT

1.	The student will formulate a survey of greenhouses and related facilities and outline good housekeeping practices to follow from selected list of practices	YES	NO
2.	The student will mix soil media according to standards specified by the instructor	YES	NO
3.	The student will demonstrate the ability to sterilize soil according to prescribed methods as indicated by the instructor	YES	NO
4.	The student will: a) develop a management program to maximize production in greenhouses, and b) identify and list typical houseplants that can be grown within the facilities available	YES	NO
5.	The student will prepare soil and seedbed according to requirements for specific bedding plants	YES	NO
6.	The student will transplant selected plants according to recommended practices	YES	NO
7.	The student will properly identify selected bedding plants	YES	NO
8.	The student will be able to water, fertilize, and follow other cultural practices needed for horticultural plants	YES	NO

		YES This Competency IS Included	NO This Competency IS NOT Included
9.	The student will demonstrate ability to: a) propagate plants by seed, cutting, or layering according to specific standards and evaluate survival rate, and b) make appropriate grafts and buds and evaluate survival rate	YES	NO
10.	The student will transplant, pot, and care for rooted cultures and seedlings according to accepted standards	YES	NO
11.	The student will demonstrate ability to follow correct procedures in planting nursery stock	YES	NO
12.	The student will: a) prepare the soil for seeding a lawn, b) seed and fertilize lawn using appropriate equipment for accurate seeding rate, and c) develop management plan for caring for newly established lawn	YES	NO

AGRICULTURAL MECHANICS COMPONENT

1.	The student will demonstrate ability to properly set up, start, and stop power tools selected in the shop	YES	NO
2.	The student will demonstrate ability to sharpen, oil, tighten, replace handles, etc., on hand tools as needed	YES	NO
3.	The student will demonstrate safety procedures on selected equipment and hand tools in the shop	YES	NO
4.	The student will select a project from a selected list and be able to sketch project and figure bill for materials	YES	NO
5.	The student will construct a project from selected list using tools and equipment	YES	NO

		YES This Competency IS Included	NO This Competency IS NOT Included
6.	The student will demonstrate ability to wire 3-way switch using selected hand tools	YES	NO
7.	The student will demonstrate ability to mix concrete according to prescribed standards	YES	NO
8.	The student will cut, thread and ream pipe	YES	NO
9.	The student will demonstrate proper settings for electric welder, demonstrate the ability to select the proper welding rod for welding a selected project, and demonstrate the ability to weld in flat, vertical, and overhead positions according to prescribed standards	YES	NO
10.	The student will demonstrate the proper technique in brazing, cutting and bending selected metal stock or plate using an oxyacetylene welding system according to prescribed standards	YES	NO
11.	The student will perform inspections on tractors at recommended time intervals	YES	NO
12.	The student will service ignition and electrical systems on tractors according to the service manuals	YES	NO
13.	The student will trouble-shoot selected problems on a tractor	YES	NO
14.	The student will demonstrate ability to attach selected equipment to power units (Tractor PTO)	YES	NO
15.	The student will assemble and adjust planting equipment according to planting conditions on lab plot	YES	NO
16.	The student will assemble and adust selected tillage equipment according to tillage conditions on lab plot	YES	NO

		YES This Competency IS Included	NO This Competency IS NOT Included
17.	The student will determine maintenance problems and make minor repairs to buildings and equipment	YES	NO

FORESTRY COMPONENT

1.	The student will list eight benefits of forest resources to man	YES	NO
2.	The student will list forest agencies, organizations, etc. (particularly local)	YES	NO
3.	The student will list local occupational areas in forestry	YES	NO
4.	The student will list and be able to explain "multiple uses of forests"	YES	NO
5.	The student will describe the different methods of planting seedlings and calculate the cost and time it will take	YES	NO
6.	The student will determine stocking rate and planting season of selected species of seedlings	YES	NO
7.	The student will: a) determine and demonstrate proper procedure to follow to obtain seedlings from state nurseries, and b) determine and demonstrate proper way to handle seedlings	YES	NO
8.	The student will determine and demonstrate selected safety practices to follow in timber management	YES	NO
9.	The student will list selected types of recreation in forestry	YES	NO
10.	The student will identify role and habitat of selected wildlife in the forest	YES	NO
11.	The student will identify selected forest trees according to leaf, flower, fruit, twig, bark, taste, smell, etc.	YES	NO

		YES This Competency IS Included	NO This Competency IS NOT Included
12.	The student will identify causes of fire according to statistics from forestry resources	YES	NO
13.	The student will list or identify three classes of forest fires	YES	NO
14.	The student will develop fire prevention measures according to prescribed conditions	YES	NO
15.	The student will identify and be able to define selected terms (head fire, etc.)	YES	NO
16.	The student will demonstrate sharpening and care of selected hand tools, axes, rakes, etc.	YES	NO
17.	The student will identify selected insects that do major damage to trees	YES	NO
18.	The student will identify selected diseases that do major damage to trees	YES	NO
19.	The student will: a) find the township and range on a local map for selected areas on the map, b) use compass to determine azimuth and bearings measurements or direction, c) understand how to set up a transit compass and level four corners, d) determine distance along selected property lines in chains and determine acres of land, e) use a biltmore stick and determine board feet for saw timber and cubic feet for pulpwood, and f) determine cords of wood from selected trees using a biltmore stick and conversion charts	YES	NO
20.	The student will: a) do general sharpening and repair of chain saw (trouble shooting), and b) understand operating procedures and safety precautions to use while using a saw to fell or buck timber	YES	NO

		YES This Competency IS Included	NO This Competency IS NOT Included
21.	The student will demonstrate knowledge of first aid techniques that apply to selected situations	YES	NO

AGRICULTURAL RESOURCES COMPONENT

1.	The student will demonstrate knowledge of soil erosion by participating on a land judging team and/or evaluating a site selected by the instructor	YES	NO
2.	The student will recommend practices to control wind or water from the exercise above, using a land judging score card	YES	NO
3.	The student will perform simple soil tests by using a soil testing kit to determine pH, N, P, and K	YES	NO
4.	The student will identify selected commercial species of trees either from a collection of leaves, slides, or on a field trip	YES	NO
5.	The student will demonstrate the ability to plant selected species of trees according to recommendations	YES	NO
6.	The student will follow a management plan and explain long range practices needed to correct or improve selected forest area	YES	NO
7.	The student will use woodlot equipment following proper safety, starting, operating, and maintenance procedures and dress	YES	NO
8.	The student will identify selected wildlife from films, slides, pictures, etc.	YES	NO

	YES This Competency IS Included	NO This Competency IS NOT Included
9. The student will: a) select and/or describe the proper habitat for selected species of wildlife from films, slides, field trips, etc and 2) make management plans to improve wildlife habitat (cover, food, and nesting) for selected areas	YES	NO
10. The student will select the proper federal and state regulations for selected areas in wildlife management	YES	NO
11. The student will identify selected fish from slides, films, pictures, etc.	YES	NO
12. The student will develop a written plan for farm pond management, including harvesting of fish, weed control, etc.	YES	NO

APPENDIX E

April 12, 1983

MEMORANDUM

TO: Selected Teachers of Applied Principles of Agribusiness and Natural Resources Occupations

FROM: Jimmy G. Cheek
Max B. McGhee
Associate Professors, Dept. of Agricultural and Extension Education, 305 Rolfs Hall, University of Florida, Gainesville, Florida 32611

RE: FORTHCOMING PACKAGE

GET READY!!! IT'S ABOUT TO HAPPEN!!!

In the next few days you will be receiving a package from us which will require your cooperation. This package comes as a result of your favorable response to an earlier mailing which asked if you would be willing to administer a test to your "Applied Principles" class(es). This is the most important phase of the project we are conducting to assess competencies possessed by students completing the Applied Principles program. Your student's participation in this activity will help improve the statewide program of Agribusiness and Natural Resources education. You should also remember that neither you, nor your school, nor your students will be identified in any reports of this activity.

So watch your mailbox! Look over the contents closely and PLEASE follow the directions as outlined, and then return the requested items promptly.

Remember - - without your help this activity will not be successful. We are depending on you. Thanks!!

APPENDIX F

April 12, 1983

M E M O R A N D U M

TO: Selected Teachers of Agriculture

FROM: Jimmy G. Cheek and Max B. McGhee, Associate Professors, Ag. & Ext. Ed., 305 Rolfs Hall, University of Florida, Gainesville, FL 32611

RE: Assessment of Competencies in Applied Principles Possessed by Students

As you may recall, a few months ago you responded to a request from us indicating that you would be willing to administer a test to students in your Applied Principles class(es).

Well, the time has arrived for us to collect on your generous offer of cooperation!

Enclosed with this mailing are some important materials that must be dealt with properly in order to avoid confusion either here at our office or in your program. The following materials should be included:

1. A sufficient number of copies of student tests for your largest class of Applied Principles. After the tests are administered you should feel free to keep them.

2. A sufficient number of answer sheets for all of the students you indicated were enrolled in Applied Principles of Ag. Occupations. Also included are self-addressed, stamped envelopes for returning the answer sheets and teacher questionnaire to our office.

3. A questionnaire entitled "Teacher Questionnaire - Applied Principles Program." You can complete this questionnaire while your students are taking the test.

4. A sheet entitled Instructions to the Teacher. These are the specific activities you will need to follow in order to properly administer and return the completed answer sheets to our office.

If any of the above materials are NOT enclosed, please call us at (904) 392-0502 and we will send them to you.

Because of our tight time schedule for completion of the project, you should administer the tests such that you can return the answer sheets no later than May 15, 1983. If you return your students' answer sheets no later than this date, we will have them scored and be able to return each students' raw score to you. You may wish to use this score as one measure of the students mastery of the competencies in your program.

In summary, we appreciate your willingness to assist us in this important effort. Please feel free to contact us if you have any questions or concerns.

JGC/MBM/ldk

Enclosures

Applied Principles
Achievement Test

INSTRUCTIONS TO THE TEACHER

1. Look at one of the tests and answer sheets and make sure you understand the procedure a student must follow to properly complete the answer sheet.

> NOTE that the only information we need (other than the answers) is the students' name. This is only for record keeping purposes and will remain confidential.

2. Make sure each student has a pencil with at least No. 2 or softer lead.

3. Pass out tests and answer sheets. If you have more than one class you will need to use the tests over again for your other class, so do not allow students to mark on the test booklet. Have students put their name in the proper blanks and then darken the circled letters below each letter in their name.

4. Encourage the students to do the best that they possibly can on the test. Have them note that questions 61-65 are general information questions that are not figured in their score.

5. Begin test. The student should be able to complete the test in one class period.

6. While students are taking the test you should complete the Teacher Questionnaire included in your packet of materials.

7. Take up tests and answer sheets. Return ANSWER SHEETS and the TEACHER QUESTIONNAIRE in the self-addressed, stamped envelope BEFORE May 15, 1983 if at all possible. You may keep the tests for future use.

8. Call us if you have any questions.

Thanks again for your help!!

APPENDIX G

MEMORANDUM

TO: Teachers assisting with the Applied Principles Assessment Project

FROM: Jimmy G. Cheek
Max B. McGhee
Associate Professors, Dept. of Agricultural and Extension Education, 305 Rolfs Hall, University of Florida, Gainesville, Florida 32611

RE: Final Comments

Let us begin by expressing our appreciation for your prompt return of the answer sheets and teacher questionnaires which were necessary to complete the data collection phase of our project. Your assistance and cooperation certainly has made our task more enjoyable.

Enclosed with this memo are the raw scores for the Applied Principles Agricultural Occupations tests completed by your students. We will have some summary statistics for all students completing the tests at a later date with which you might compare your students' level of mastery.

Again, let us say thanks for your time and cooperation. If we can be of assistance to you in any way in the future, please feel free to contact us.

Enclosure

APPENDIX H

MEMORANDUM

TO: Teachers assisting with the Applied Principles of Agribusiness Occupations Assessment Project

FROM: Jimmy G. Cheek
Max B. McGhee
Associate Professors, Dept. of Agricultural and Extension Education, 305 Rolfs Hall, University of Florida, Gainesville, Florida 32611

RE: Return of Answer Sheets

Time is growing short in the school year and in reviewing our records we noticed that your answer sheets and teacher questionnaires have not yet arrived in our office. It is very important that we receive responses from all schools/teachers who have agreed to assist us in this activity. If you have not already done so, please administer the tests and return the answer sheets and teacher questionnaire as soon as possible.

If you have encountered some difficulties or have questions, please feel free to contact us at (904) 392-0502.

Again, we appreciate your interest in assisting us in this effort.

P.S. If you have already mailed the requested materials, thanks for your promptness.

APPENDIX I

NUMBER AND PERCENTAGE OF RESPONDENTS
TEACHING COMPETENCIES IDENTIFIED IN
CURRICULUM GUIDE FOR APPLIED PRINCIPLES

n = 44

		YES This Competency IS Included		NO This Competency IS NOT Included	
		N	Percent	N	Percent
Agricultural Business Management					
1.	The student will demonstrate knowledge necessary for developing an ongoing agricultural enterprise.	39	89	5	21
2.	The student will demonstrate knowledge necessary for estimating costs and returns of an agricultural enterprise	34	77	10	23
3.	The student will demonstrate knowledge necessary for selecting a market for products of agricultural enterprises	30	68	14	32
4.	The student will define a good credit rating	29	67	14	33
5.	The student will develop a personal budget	24	57	18	43
6.	The student will make deposits, write checks, and balance a checkbook	20	48	22	52
7.	The student will determine insurance needs	15	35	28	65
8.	The student will list or describe available sources of agricultural credit, both private and governmental	28	64	16	36
9.	The student will determine the type of credit needed, long term, intermediate term, and/or short term	23	52	21	48
10.	The student will compute interest rates	22	51	21	49

		YES This Competency IS Included		NO This Competency IS NOT Included	
		N	Percent	N	Percent
11.	The student will describe advantages and disadvantages, and list local examples of each of the following systems: Individual; Ownerships, Partnerships; Cooperatives; Corporations	29	66	15	34
12.	The student will list or describe agricultural agencies and the services they render	30	68	14	32
13.	The student will locate local agricultural agencies' offices	31	72	12	28
14.	The student will demonstrate ability to utilize services of agricultural agencies	26	62	16	38
	Agricultural Mechanics				
1.	The student will identify and properly demonstrate use of shop and laboratory safety equipment	40	93	3	7
2.	The student will identify safety areas in the shop and cite their purpose	42	95	2	5
3.	The student will identify the different types of fires and identify the equipment used to extinguish various types of fires	30	70	13	30
4.	The student will identify injuries where simple first-aid can be administered and demonstrate techniques used in first-aid to care for the injury	26	60	17	40
5.	The student will demonstrate proper use of power tools and equipment in the shop	36	82	8	18
6.	The student will demonstrate proper safety practices that apply to the power tools and equipment in the shop	38	86	6	14

		YES This Competency IS Included		NO This Competency IS NOT Included	
		N	Percent	N	Percent
7.	The student will perform daily checks on selected equipment including lubrication, belts, chains, blades, guards, and damage	27	63	16	37
8.	The student will identify all parts of a small gas engine and describe their function	16	37	27	63
9.	The student will identify the parts of the ignition system and be able to service and/or replace parts including the battery, coil, starter, switch, spark plugs, points, conductors, condensor, alternator, voltage regulator, and generator	15	35	28	65
10.	The student will identify parts of the fuel system and service and/or replace parts	17	40	26	60
11.	The student will trouble-shoot small gasoline engines for minor problems and make repair or replacement of engine parts	16	36	28	64
12.	The student will perform a daily check on selected equipment powered by a small gas engine	17	39	27	61
13.	The student will perform daily inspection on a tractor	33	75	11	25
14.	The student will service the fuel system on a tractor engine	24	56	19	44
15.	The student will service the ignition system on a tractor engine	14	33	28	67
16.	The student will demonstrate use of service manuals for tractors and tractor equipment	27	63	16	37
17.	The student will demonstrate proper driving and handling techniques on selected tractor and tractor equipment	36	82	8	18

	YES This Competency IS Included		NO This Competency IS NOT Included	
	N	Percent	N	Percent
Leadership and Citizenship Development				
1. The student will cite purpose of committees	39	89	5	11
2. The student will serve effectively on a committee	42	95	2	5
3. The student will list or identify different types of committees	37	84	7	16
4. The student will give a committee report	36	82	8	18
5. The student will state or describe purpose of the Program of Activities (POA)	40	91	4	9
6. The student will list major divisions of POA	37	84	7	16
7. The student will be able to suggest local activities for the POA	37	84	7	16
8. The student will list major criteria to consider in choosing activities for POA	35	80	9	20
9. The student will choose award programs appropriate to students' interest and SCEP	36	82	8	18
10. The student will properly complete awards applications	31	70	13	30
11. The student will describe chapter award activities	33	75	11	25
12. The student will prepare a meeting agenda	26	59	18	41
13. The student will recognize role of members and chairman of an organization	38	86	6	14
14. The student will demonstrate how to handle and dispose of motions	41	93	3	7

		YES This Competency IS Included		NO This Competency IS NOT Included	
		N	Percent	N	Percent
15.	The students will apply their knowledge of conducting a meeting to other school and community groups	35	80	9	20
16.	The student will recognize citizen responsibilities	38	86	6	14
17.	The student will conduct him/herself properly in different situations regarding citizenship	41	93	3	7
18.	The student will show respect for other views and opinions	42	95	2	5
19.	The student will complete job application forms	25	57	19	43
20.	The student will choose a topic for an oral report	33	75	11	25
21.	The student will prepare an outline for an oral report	32	73	12	27
22.	The student will give an oral report	34	77	10	23
23.	The student will defend the presentation of an oral report to peers	28	64	16	36
AGRICULTURAL PRODUCTION COMPONENT					
1.	The student will formulate a ration for a specific class of animals	17	47	19	53
2.	The student will identify three major organs of the cow's reproductive tract	24	67	12	33
3.	The student will identify functions of each major organ in the cow's reproductive tract	23	64	13	36
4.	The student will identify three major organs of the bull's reproductive tract	23	64	13	36

		YES This Competency IS Included		NO This Competency IS NOT Included	
		N	Percent	N	Percent
5.	The student will identify functions of each major organ in the bull's reproductive tract	22	61	14	39
6.	The student will manage facilities related to animal production including waste disposal	17	47	19	53
7.	The student will analyze animal production records and data	18	50	18	50
8.	The student will develop and maintain breeding records	11	31	24	69
9.	The student will perform minor management practices (tagging, dehorning, castrating)	16	44	20	56
10.	The student will determine the best crop to grow on special land areas	23	64	13	36
11.	The student will identify control measures for insects attacking crops	27	77	8	23
12.	The student will identify control measures for crop diseases	28	80	7	20
13.	The student will plan a weed control program for crops	21	62	13	38
14.	The student will select appropriate cultural practices for crops	30	88	4	12
15.	The student will fertilize crops according to recommended practices	34	97	1	3
16.	The student will practice safety when applying pesticides	32	91	3	9
17.	The student will keep crop production records	26	74	9	26
18.	The student will analyze crop production records	23	66	12	34

		YES This Competency IS Included		NO This Competency IS NOT Included	
		N	Percent	N	Percent
19.	The student will determine needs for insurance	12	35	22	65
20.	The student will plan labor and capital needs	22	63	13	37
21.	The student will identify marketing outlets	26	74	9	26
22.	The student will trouble-shoot for minor farm power and machinery problems	21	60	14	40
23.	The student will use service and repair manuals	23	68	11	32
24.	The student will demonstrate the use of major farm machinery units such as plows, discs, and mowers	27	77	6	23
ORNAMENTAL HORTICULTURE COMPONENT					
1.	The student will formulate a survey of greenhouses and related facilities and outline good housekeeping practices to follow from selected list of practices	17	74	6	26
2.	The student will mix soil media according to standards specified by the instructor	20	87	3	13
3.	The student will demonstrate the ability to sterilize soil according to prescribed methods as indicated by the instructor	12	52	11	48
4.	The student will: a) develop a management program to maximize production in greenhouses, and b) identify and list typical houseplants that can be grown within the facilities available	19	83	4	17

		YES This Competency IS Included		NO This Competency IS NOT Included	
		N	Percent	N	Percent
5.	The student will prepare soil and seedbed according to requirements for specific bedding plants	19	83	4	17
6.	The student will transplant selected plants according to recommended practices	20	87	3	13
7.	The student will properly identify selected bedding plants	17	77	5	23
8.	The student will be able to water, fertilize, and follow other cultural practices needed for horticultural plants	21	91	2	9
9.	The student will demonstrate ability to: a) propagate plants by seed, cutting, or layering according to specific standards and evaluate survival rate, and b) make appropriate grafts and buds and evaluate survival rate	19	83	4	17
10.	The student will transplant, pot, and care for rooted cultures and seedlings according to accepted standards	20	87	3	13
11.	The student will demonstrate ability to follow correct procedures in planting nursery stock	19	83	4	17
12.	The student will: a) prepare the soil for seeding a lawn, b) seed and fertilize lawn using appropriate equipment for accurate seeding rate, and c) develop management plan for caring for newly established lawn	8	35	15	65
	AGRICULTURAL MECHANICS COMPONENT				
1.	The student will demonstrate ability to properly set up, start, and stop power tools selected in the shop	21	95	1	5

		YES This Competency IS Included		NO This Competency IS NOT Included	
		N	Percent	N	Percent
2.	The student will demonstrate ability to sharpen, oil, tighten, replace handles, etc., on hand tools as needed	16	73	6	27
3.	The student will demonstrate safety procedures on selected equipment and hand tools in the shop	21	95	1	5
4.	The student will select a project from a selected list and be able to sketch project and figure bill for materials	12	55	10	45
5.	The student will construct a project from selected list using tools and equipment	11	50	11	50
6.	The student will demonstrate ability to wire 3-way switch using selected hand tools	10	45	12	55
7.	The student will demonstrate ability to mix concrete according to prescribed standards	14	64	8	36
8.	The student will cut, thread and ream pipe	14	64	8	36
9.	The student will demonstrate proper settings for electric welder, demonstrate the ability to select the proper welding rod for welding selected project; and demonstrate the ability to weld in flat, vertical, and overhead positions according to prescribed standards	19	86	3	14
10.	The student will demonstrate the proper technique in brazing, cutting and bending selected metal stock or plate using an oxyacetylene welding system according to prescribed standards	18	82	4	18
11.	The student will perform inspections on tractors at recommended time intervals	16	73	6	27

		YES This Competency IS Included		NO This Competency IS NOT Included	
		N	Percent	N	Percent
12.	The student will service ignition and electrical systems on tractors according to the service manuals	8	36	14	64
13.	The student will trouble-shoot selected problems on a tractor	11	50	11	50
14.	The student will demonstrate ability to attach selected equipment to power units (Tractor PTO)	19	86	3	14
15.	The student will assemble and adjust planting equipment according to planting conditions on lab plot	12	55	10	45
16.	The student will assemble and adjust selected tillage equipment according to tillage conditions on lab plot	14	64	8	36
17.	The student will determine maintenance problems and make minor repairs to buildings and equipment	18	86	3	14
FORESTRY COMPONENT					
1.	The student will list eight benefits of forest resources to man	5	83	1	17
2.	The student will list forest agencies, organizations, etc. (particularly local)	6	100	0	0
3.	The student will list local occupational areas in forestry	6	100	0	0
4.	The student will list and be able to explain "multiple uses of forests"	5	83	1	17
5.	The student will describe the different methods of planting seedlings and calculate the cost and time it will take	5	83	1	17

		YES This Competency IS Included		NO This Competency IS NOT Included	
		N	Percent	N	Percent
6.	The student will determine stocking rate and planting season of selected species of seedlings	3	50	3	50
7.	The student will: a) determine and demonstrate proper procedure to follow to obtain seedlings from state nurseries, and b) determine and demonstrate proper way to handle seedlings	5	83	1	17
8.	The student will determine and demonstrate selected safety practices to follow in timber management	5	83	1	17
9.	The student will list selected types of recreation in forestry	5	83	1	17
10.	The student will identify role and habitat of selected wildlife in the forest	4	67	2	33
11.	The student will identify selected forest trees according to leaf, flower, fruit, twig, bark, taste, smell, etc.	5	83	1	17
12.	The student will identify causes of fire according to statistics from forestry resources	5	83	1	17
13.	The student will list or identify three classes of forest fires	3	50	3	50
14.	The student will develop fire prevention measures according to prescribed conditions	4	67	2	33
15.	The student will identify and be able to define selected terms (head fire, etc.)	3	60	2	40
16.	The student will demonstrate sharpening and care of selected hand tools, axes, rakes, etc.	4	67	2	33

		YES This Competency IS Included		NO This Competency IS NOT Included	
		N	Percent	N	Percent
17.	The student will identify selected insects that do major damage to trees	2	33	4	67
18.	The student will identify selected diseases that do major damage to trees	2	33	4	67
19.	The student will: a) find the township and range on a local map for selected areas on the map, b) use compass to determine azimuth and bearings measurements or direction, c) understand how to set up a transit compass and level four corners, d) determine distance along selected property lines in chains and determine acres of land, e) use a biltmore stick and determine board feet for saw timber and cubic feet for pulpwood, and f) determine cords of wood from selected trees using a biltmore stick and conversion charts	5	83	1	17
20.	The student will: a) do general sharpening and repair of chain saw (trouble shooting), and b) understand operating procedures and safety precautions to use while using a saw to fell or buck timber	2	33	4	67
21.	The student will demonstrate knowledge of first aid techniques that apply to selected situations	4	67	2	33
AGRICULTURAL RESOURCES COMPONENT					
1.	The student will demonstrate knowledge of soil erosion by participating on a land judging team and/or evaluating a site selected by the instructor	0	0	1	100
2.	The student will recommend practices to control wind or water from the exercise above, using a land judging score card	0	0	1	100

		YES This Competency IS Included		NO This Competency IS NOT Included	
		N	Percent	N	Percent
3.	The student will perform simple soil tests by using a soil testing kit to determine pH, N, P, and K	0	0	1	100
4.	The student will identify selected commercial species of trees either from a collection of leaves, slides, or on a field trip	1	100	0	0
5.	The student will demonstrate the ability to plant selected species of trees according to recommendations	1	100	0	0
6.	The student will follow a management plan and explain long range practices needed to correct or improve selected forest area	1	100	0	0
7.	The student will use woodlot equipment following proper safety, starting, operating, and maintenance procedures and dress	0	0	1	100
8.	The student will identify selected wildlife from films, slides, pictures, etc.	1	100	0	0
9.	The student will: a) select and/or describe the proper habitat for selected species of wildlife from films, slides, field trips, etc and 2) make management plans to improve wildlife habitat (cover, food, and nesting) for selected areas	1	100	0	0
10.	The student will select the proper federal and state regulations for selected areas in wildlife management	1	100	0	0
11.	The student will identify selected fish from slides, films, pictures, etc.	1	100	0	0

	YES This Competency IS Included		NO This Competency IS NOT Included	
	N	Percent	N	Percent
12. The student will develop a written plan for farm pond management, including harvesting of fish, weed control, etc.	0	0	1	100